EDITORIAL STAFF

E. L. Shaner
Editor-in-Chief
E. C. Kreutzberg
Editor
A. J. Hain
Managing Editor
E. F. Ross
Engineering Editor
Guy Hubbard
Machine Tool Editor
D. S. Cadot
Art Editor

ASSOCIATE EDITORS

G. H. Manlove — J. D. Knox
W. G. Gude — G. W. Birdsall
W. J. Campbell
New York
I. H. Such — B. K. Price
L. E. Browne
Pittsburgh — *Chicago*
R. L. Hartford — J. F. Powell
Detroit — *Washington*
A. H. Allen — L. M. Lamm
London
Vincent Delport

ASSISTANT EDITORS

A. R. Finley — Bert D. Lynn
J. C. Sullivan — LaVerne Nock
New York
John H. Caldwell

BUSINESS STAFF

G. O. Hays
Business Manager
C. H. Bailey
Advertising Service

New York . E. W. Kreutzberg
B. C. Snell
Pittsburgh . . . S. H. Jasper
Chicago . . . L. C. Pelott
Cleveland . . . R. C. Jaenke
D. C. Kiefer
J. W. Zuber
Circulation Manager

MAIN OFFICE

Penton Building, Cleveland

BRANCH OFFICES

New York . . . . 110 East 42nd St.
Chicago . 520 North Michigan Ave.
Pittsburgh . . . . Koppers Building
Detroit . . . . 6560 Cass Ave.
Washington . National Press Building
Cincinnati . . . . 282 Sinton Hotel
San Francisco . . 1100 Norwood Ave.
Oakland, Calif., Tel. Glencourt 7559
London . . . . . Caxton House
Westminster, S.W. 1
Berlin . Berlin, N.W. 40, Roonstrasse 10

• • •

Published by The Penton Publishing Co., Penton Building, Cleveland, Ohio. John A. Penton, Chairman of Board; E. L. Shaner, President and Treasurer; J. R. Dawley and G. O. Hays, Vice Presidents; F.G. Steinebach, Secretary.
Member, Audit Bureau of Circulations; Associated Business Papers Inc., and National Publishers' Association.
Published every Monday. Subscription in the United States, Cuba, Mexico and Canada, one year **$4**, two years **$6**; European and foreign countries, one year **$10**. Single copies (current issues) 25c.
Entered as second class matter at the postoffice at Cleveland, under the Act of March 3, 1879.

Copyright 1939 by the Penton Publishing Co.

STEEL

ESTABLISHED 1882

Contents

Volume 105—No. 17 **October 23, 1939**

READER COMMENTS 11

AS THE EDITOR VIEWS THE NEWS 15

NEWS
- "Earning Profit, Industry's Patriotic Duty" 17
- Steelworks Operations for Week 20
- Hardware Group Opposed to War 21
- Financial News of Steel Industry 23
- Aviation 27
- Science Looks at Democracy, War 32
- Meetings 32
- What's New at Pittsburgh 33
- Men of Industry 34
- Obituaries 34
- Machine Tool Show in Vermont 35
- Activities of Steel Users, Makers 35

WINDOWS OF WASHINGTON 25

MIRRORS OF MOTORDOM 29

EDITORIAL—The Business Outlook 36

THE BUSINESS TREND
- Rate of Industrial Activity Nears 1937 Peak Levels 37
- Charts and Statistics 38-39

TECHNICAL
- Gaging Methods Keep Pace with Production Developments 40
- New Coating Offers Unusual Corrosion Resistance 42
- Model House at Golden Gate Fair Features Use of Steel 44
- Steel Filling Stations Use Welded Sectional Panel Construction 65
- Gearmakers Review Advances in Production, Finishing Process 66
- New Black-Plating Process Has High Rate of Deposition 73

MATERIALS HANDLING
- A Brass Foundry 48

JOINING AND WELDING
- Tin-Coated Electrodes 52

PROGRESS IN STEELMAKING
- New Continuous Strip Mill 56

INDUSTRIAL EQUIPMENT 62

HELPFUL LITERATURE 67

METAL FINISHING
- Enamelers' Forum 70

MARKET REPORTS AND PRICES 75
- The Market Week 76

BEHIND THE SCENES 88

CONSTRUCTION AND ENTERPRISE 92

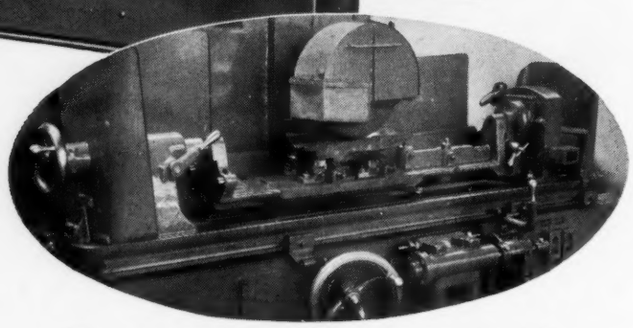
INDEX TO ADVERTISERS 98

PRODUCTION · PROCESSING · DISTRIBUTION · USE

SAVE

"a mile a minute"

New Morgan Guide Grinder

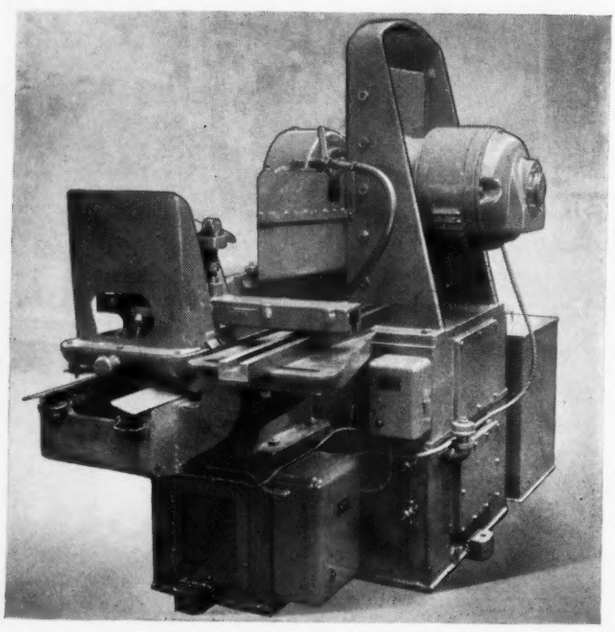


The upper photographs show the operator making adjustments for grinding a twist guide, also details of cradle mounting with splash guard removed. Below is shown a view from the rear of the machine.

A mile of grooved section is too high a price to pay for "working in" a set of guides. Yet until now, there has been no single machine on which guides of all styles and sizes could be accurately ground.

The Morgan Construction Company has developed a new Guide Grinder to meet every requirement of this important job. It will handle guides of all types and sizes required in a rod mill. Its manual and automatic controls provide for every adjustment—up, down, backward, forward, for straight or twist guides. It is compact and self-contained—can be set anywhere.

Here is an investment in equipment that will be worth miles of rod saved to you, in improved quality of finished section.



MORGAN CONSTRUCTION COMPANY
WORCESTER, MASSACHUSETTS, U. S. A.

R62

LET MORGAN WORCESTER ENGINEERS AND MANUFACTURERS REMOVE THE LAGS

STEEL
PRODUCTION • PROCESSING • DISTRIBUTION • USE

As the Editor Views the News

■ STEEL production lately has been at the highest level in history. The operating rate last week (p. 20) gained another 1½ points, rising to 91 per cent of ingot capacity. Additional plant facilities (p. 75) are being readied for service. Domestic consumption is rising and pressure for deliveries of steel continues heavy. Additional orders rapidly are filling the little remaining fourth quarter capacity and first quarter bookings are more active. On the lakes 286 vessels now are building up ore stocks at blast furnaces and lower lake ports to the maximum extent possible before the closing of navigation. The railroads continue outstanding buyers. Little steel is being sold for export. . . . STEEL'S index of industrial activity (p. 37) now is approaching the 1937 peak.

• • •

Price Views

The steel industry has no margin from which to absorb large increases in costs, declared E. T. Weir before the American Institute of Steel Construction (p. 17); he holds that decisions of steel companies as to steel prices must be based on urgent economic necessity rather than upon political threats from Washington. . . . The present situation offers an opportune time to promote education on price policy—establishment of a policy against taking business at a price that is unprofitable (p. 22) said E. L. Shaner, editor-in-chief, STEEL, at last week's Hardware convention. . . . The heavy fabricating industry during the past nine years (p. 18) has earned a profit of only 0.3 per cent.

• • •

Labor Tactics

Slowdown tactics (p. 29) have reduced labor efficiency in many automobile and autoparts plants by 25 per cent, in some cases 50 per cent, and are holding down output. Companies involved established their prices on expectation of normal labor efficiency and now find their costs out of line. . . . Despite its present troubles, the 40-year accomplishment record of the automobile industry (p. 30) is an impressive one. . . . Order backlog of the aviation industry (p. 27) stands at $325,000,000. Lifting of the arms embargo will see this total sharply augmented as a result of purchases by England and France. . . . The decision against the labor department's minimum steel ruling (p. 26) is to be appealed to the Supreme Court. . . . Relief rolls (p. 33) are shrinking.

• • •

Coating Processes

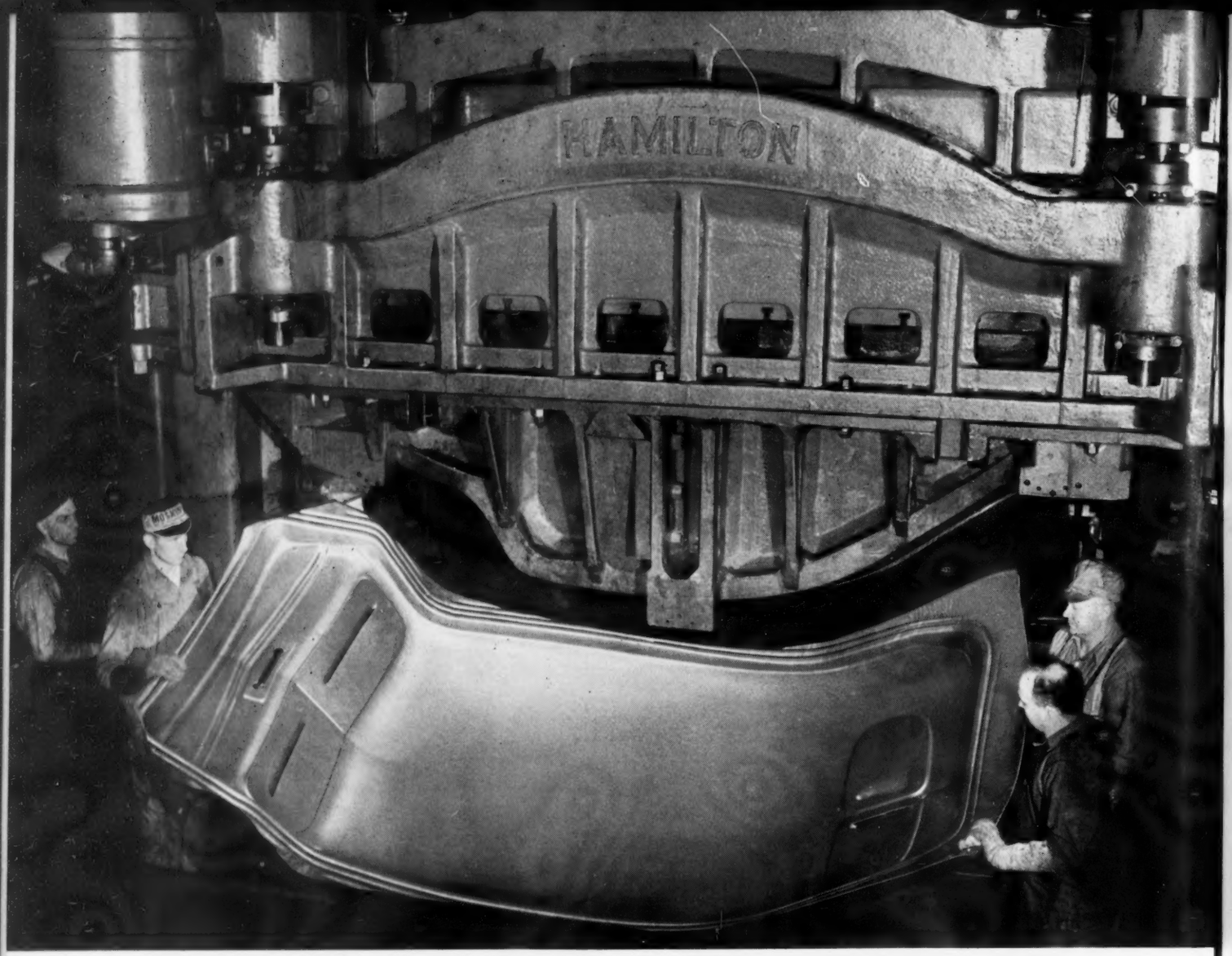
Gaging more and more is coming to be an actual function of the modern machine tool, either through accurate "dial settings" of the cutting tools, or by "size control" through some other means integral with the machine, says Guy Hubbard, STEEL'S machine tool editor; he cites some typical examples (p. 40). . . . A new metallic coating offers unusual corrosion resistance (p. 42); it has given remarkable results in such severe applications as sucker rods pumping highly corrosive hydrogen sulphide and salt solutions; several large steel companies have signed license agreements. . . . A new black plating process (p. 73) produces lustrous, deep-black electrodeposits that have no color refraction under an intense beam in a dark room.

• • •

Resists Chipping

Materials for gears, methods of producing and finishing gear teeth, production costs and current economic conditions were discussed (p. 66) at the American Gear Manufacturers association's meeting last week. . . . Finer milling in the preparation of porcelain enamels (p. 70) permits greater coverage, increased burning speed, with coats that resist chipping. . . . Steel and stainless steel have been applied to an unusual extent in a model home (p. 44) at the Golden Gate fair. . . . Revised layout of equipment in a brass foundry (p. 48) reduces handling to a minimum, permits better housekeeping and working conditions, more than doubles capacity with same floor area. . . . By a new method of welding galvanized sheets (p. 52) a coating of tin takes the place of vaporized zinc.

E C Kreutzberg



INLAND Sheets

—custom-fitted to your requirements

WHEN you buy steel, think of it in terms of your product—your particular forming operations—your manufacturing methods. What constitutes the right steel for someone else may not be at all the correct steel for your purpose.

At Inland we think of steel in the same way—an individual matter—a product made to fit your precise needs.

You see the result of that attitude in the character of Inland Cold Rolled Sheets. Their exact conformance to specifications, their superior finish, their dependable forming qualities are painstakingly built into them—from selection of raw materials, throughout each step of melting, heating, rolling, finishing.

More and more steel users, as they learn of this principle of custom-fitted sheets, find profit and satisfaction in doing business with Inland.

INLAND STEEL CO.

38 S. Dearborn St., CHICAGO • District Offices: MILWAUKEE • DETROIT • ST. PAUL • ST. LOUIS • KANSAS CITY • CINCINNATI

SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Earning Profit Industry's Patriotic Duty, Steel Constructors Told

■ PROFIT experience of the steel industry shows conclusively the industry has no margin from which to absorb any large increase in costs, declared Ernest T. Weir before the seventeenth annual meeting, American Institute of Steel Construction, New York, Oct. 17-18. Mr. Weir, chairman, National Steel Corp., and president, American Iron and Steel institute, spoke on "Profits and Patriotism."

Threats of "dire consequences to the steel industry" in the event steel prices were increased were scored by the speaker. His comments were evoked by statements of unnamed "economic advisors" to President Roosevelt quoted in a newspaper article as saying, "a steel price advance and its consequences would produce 'irresistible' pressure for new control plans and other forms of governmental interference with business."

"Whatever price action is to be taken is a matter to be decided by individual (steel) companies," Mr. Weir said. "And I believe their decisions must be based on urgent economic necessity rather than upon political threats from Washington."

The institute president pointed out that despite great increases in the prices of raw materials, the great majority of steel companies had not increased prices. Only companies which were unable to cover raw material needs before prices went up made any increase.

Raw Material Prices Advance

Greatest increase has been in the cost of scrap steel, Mr. Weir said, but all raw materials that go into the making of steel have advanced in price. As examples he mentioned ferromanganese which advanced 25 per cent; tin, 17 per cent; zinc, 35 per cent; fuel oil, 18 per cent and coal 10 per cent.

"I wish to point out that these higher raw material costs have been offset only in part by the currently increased rate of operation," he said. "I do not foresee any increase in prices which will fully cover these greater costs. However, I do not doubt that most mills will at some time find it necessary to recover at least some part of these increases.

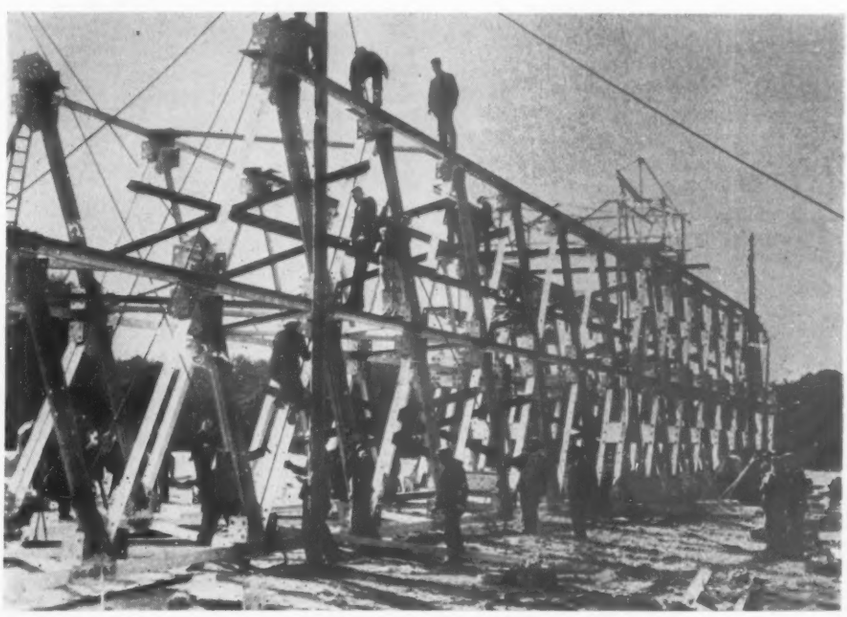
"Average net profit of the entire industry, before dividends, in the last three years has been only $4.07 a ton of products produced for sale. After preferred dividends, which are a fixed charge, net dividends were only $2.14 in this period. In the first six months of 1939, net profits before preferred dividends were $1.71 per ton, while after dividends, they were 27 cents a ton."

Management Is Responsible

Mr. Weir characterized the present business boom as unsound, saying that it rested "on a foundation about as firm and strong as the filling in a cream puff." He remarked that the country must not lose sight of unemployment and other domestic problems and stated that when peace returns "these problems will be there waiting, and redoubled in size and in gravity." After describing the failure of the steel industry and the steel construction industry to earn profits during recent years, Mr. Weir placed major responsibility for this condition on the shoulders of management.

"There is only one place to put the blame for this," he said, "and it is not on government. Government is indirectly but not directly responsible. Government has increased the costs of business, has added new costs, and has created the general conditions which have deprived business of satisfactory volume. But government has not yet assumed the control over prices which would make it mandatory for business to operate at a loss. No, the direct responsibility for non-profitable business must be placed squarely on the

English Practice Speedy Bridge Building



■ British workers have been trained in high-speed bridge construction, in case present spans are destroyed by enemy air raiders. Above, transport contractors' employes give demonstration of rapid steel erection "somewhere in Buckinghamshire." Acme photo

doorstep of industry's own management."

The solution to the problem of earning profits is one that each company must seek for itself, Mr. Weir emphasized.

"I am not suggesting that companies in an industry get together and agree on prices," he said. "There are many phases of business on which companies can co-operate through their trade associations to their own and the public benefit. Price is not one of them. A price policy is one that must be established by each individual company in accordance with cost and other factors peculiar to that company.

"The job of each individual company is to see that its prices cover its own costs, not empirically established average costs of its industry. Where this is done, prices inevitably gravitate to the point at which the more efficient producers can cover costs and make a profit. Lower prices established by this method are economically sound."

In contrast to lower prices that are the result of efficient operation, Mr. Weir pointed out, "lower prices that are due to sacrificed profits and costs rob stockholders, ruin companies, degrade standards of the industry, and actually threaten existence of the system of private enterprise."

"Profits, Wages Not Opposed"

There is no conflict between profits and wages, the steel leader stated. "There is a strong popular belief that profits and wages are opposed to each other—that one can be increased only at the expense of the other," he said. "Of course, the opposite is true. Records of poor times and prosperous times in the United States show that wages and profits go up and down together. Furthermore, the highest wages have been paid consistently in the industries and companies with the best profit records. It is obvious that a profitable company is under neither temptation nor necessity to reduce wages or resort to sweatshop practices in the effort to make ends meet. The profitable company not only gives higher and steadier wages and better working conditions to employes, it also contributes to the prosperity and progress of the community of which it is a part."

After stressing the need for America to prepare now for trying conditions at the cessation of war, Mr. Weir said:

"We have a chance if we don't go soft. We have a chance if we keep these problems as fresh in mind as they were a few short weeks ago—as fresh in mind as they are to the fellow who is still out of a job. We have a chance if we keep everlastingly hammering to see that these problems are met with sound domestic solutions. We have a chance if America stays out of war. If America goes into war, I am afraid that none of us here will live to see again the freedom which we once so calmly regarded as our natural birthright. War this time places at stake not only American lives and treasure, but the very principles which have made Americans the world's first real race of freemen.

"War Will Destroy Capitalism"

"Our credit structure now strains under a debt of about forty-five billions," he continued. Add to these billions the many billions more that would be poured into a war venture and what would happen? Capitalism would be expected to foot the bill for this as it is for everything else. When it failed, as it would, what would be blamed? You know the answer. The capitalistic system, of course. Out with it! Let's try another! What other? I don't know the answer to that.

"But I do know that the collectivist idea has made deeper inroads in American government than anyone would have thought possible a few short years ago. I know that in event of war we can expect a degree of regimentation and control by government that is now unthinkable, and I know that the conditions that will follow war will be much less conducive to the return of individual freedom than they will be to the flowering of collectivism with its inevitable climax—dictatorship

"The present, imperative duty of any real American is to keep America out of war," Mr. Weir concluded. "The second duty—and it is almost as important—is to insist that beginning now this country must find American solutions to American problems."

Profits, or lack of them in the heavy fabricating industry, was the subject at one entire session, fabricators from many districts taking part after Robert T. Brooks, executive vice president, declared earnings during the last nine years (1930-38) resulted in an approximate profit of 0.3 per cent on sales.

As reported by the Robert Morris Associates, value of products shipped by the industry during that period reached approximately a billion dollars on which profits were only three million. Greater changes must be expected in the next ten years than those which developd in the last ten, in Mr. Brooks' opinion.

Despite the poor profit showing, he said, obsolescence and depreciation are not included in some earnings reports. During the years ahead, Mr. Brooks suggested there might be some increase in volume, but doubted if the speculative volume of the 1920's will be attained.

In the discussion, the struggle for volume at the expense of profits was, as usual, stressed by most fabricators. T. R. Mullen, Lehigh Structural Steel Co., Allentown, Pa., suggested greater co-operation among district groups might iron out some of the local difficulties. A. O. Wilson, A. O. Wilson Structural Co., declared efforts to attain such co-operation in the New England territory had failed dismally. On the other hand, representatives of the Virginia-Carolina district were unanimous such group co-operation was successful in that area.

War is not good for business and the entrance of the United States into a conflict would have a disastrous effect on the fabricated structural industry, declared President Clyde G. Conley, Mt. Vernon Bridge Co., Mt. Vernon, O., in his annual address.

Heavy Industries Would Suffer

While war may bring temporary profit to some industries such would not be the case with structural fabricators. These would be caught by higher prices and lose the short-term profit enjoyed by some industries, he said. In the aftermath, the heavy steel industry would be unable to average up with others and forced to undergo a long period of stagnation until accumulated savings wipe out deficits of war and new construction is again possible.

Discussing the general political and economic situation, Mr. Conley suggested the nation has gone too far in cutting down production. Better for all would be to allow production to increase even if necessary to allow an increase in working hours.

Heavy expenditures for manufacturing plants will be required as a result of large increases in purchases of armaments and equipment. This has already been necessary in the airplane and shipbuilding industries, Mr. Conley said. Fabricated structural steel industry can count itself in on this and likely will benefit more from the new program than it did in previous pump-priming and spending programs by the federal government.

He praised the new trend in highway building which the government intends to stimulate, namely express highways through congested areas with sections elevated and of steel.

Reports from more than 2000 cities show an increase of 20.4 per cent in building permits during the first six months of the current year as compared with 1938. The gain has been notable in multi-family units and apartments, gains in that

branch of construction being nearly 150 per cent. Greater increase has been in congested districts.

Reviewing the history and program of the institute, especially since 1929, Secretary V. G. Iden presented a cross-section of opinion expressed by members and others as to value of the organization's services. Influence of the trade association in the field of politics is at its lowest ebb, but this is a time to remain steadfast in convictions and hold to what the industry knows to be best in management, he said.

He stressed the value of the manual published by the institute, encouragement of fair trade practices and the promotion of standardization of technical and trade practices. Good offices have also been offered, whenever possible, to assure fair treatment of the fabricating industry by the mills.

Development of markets through research and direct contact with various sources of jobs is another institute service outlined by Mr. Iden, who also said the organization was constantly educating the smaller fabricator by supplying best technical information and data.

Cost studies made during the last three years are rapidly bearing fruit, he claimed. Public relations have been developed and greatly improved. Railroads are more and more adopting the institute method of calculating weights. Progress in grade crossing elimination, elevated highway construction, annual bridge prize competition and other development activities were reviewed by the secretary.

Structural steel bookings the first eight months of this year were 28 per cent above the same period, 1938, or 869,875 tons against 692,885 tons, according to T. H. Hendrix, director of statistics. Except for August, new business booked each month has exceeded the corresponding month of last year.

To maintain this high average, Mr. Hendrix declared, bookings during the remainder of the year would have to hold at a high average. Bookings for the last quarter, 1938, reached 471,000 tons due to pressure to cover on public works before the first of the year.

Research Programs Reported

F. H. Frankland, chief engineer, reported research programs now in progress involve stress distribution in steel rigid frames, battledeck floor, plate girder tests, short column investigation, perforated cover plates. The engineering section is also making special studies of welding, cold-driven rivets, and cleaning and dehydrating structural steel.

Paul G. Hoffman, president, Studebaker Corp., said that today we are getting 250,000,000 vehicle miles with 30,000,000 cars and trucks, but with safer roads we will be getting 500,000,000 vehicle miles from 40,000,000 cars and trucks 20 years hence. In the meantime Mr. Hoffman visioned the spending of at least $25,000,000,000 in modernizing street facilities within cities and that much more on the improvement of highways outside our cities.

Planned centralization in office and commercial buildings is best accomplished by high buildings, declared Henry Wright, associate editor, Architectural Forum. He compared the advantages of the typical skyscraper office building with the qualities of the horizontal type as exemplified by the extensive department of commerce and labor buildings in Washington.

Apparently there is no disagreement as to the needs of express highways to tap and drain city congestion, but local authorities are hesitant about undertaking needed improvements because of undetermined costs, reported the committee on elevated highways, R. C. Mahon, Detroit, chairman.

The industry should accept the opportunity, and in co-operation with engineers, encourage development of economical elevated highway designs.

Elevated highway designs are being considered by Pittsburgh with engineers about to make a report following a study of traffic problems of that city. Several plans for elevated highways have been advanced for Chicago following bonding legislation by Illinois which will enable the city to start plans.

Tow Chicago's New 200-Foot Arc Welded Steel Tunnel to Site

■Chicago's new river tunnel, a double tube of steel, 200 feet long, 40 feet wide, 23 feet high and weighing 6500 tons, is towed (left) 15 miles down the Calumet river to its site. Early in November it will be sunk into position in a trench dredged to a 30-foot depth below river bottom. Close up of a portion of tube is shown below. Built by Graver Tank & Mfg. Co., East Chicago, Ind., the structure is arc welded. Acme and Lincoln Electric Co. photos

Detroit, San Francisco, Los Angeles and other large cities have comprehensive projects under consideration.

Committee on public relations, J. G. Shryock, Belmont Iron Works, Philadelphia, chairman, reported its belief good results are achieved from co-operative advertising. Although the present emergency may not be the best opportunity to start such a campaign, nevertheless the potentialities are real and should not be overlooked. Co-operative advertising is continued in England despite the war, the chairman reported.

"Ductility and Strength of Structural Steel as Influenced by Rivet Holes and Type of Connections," was discussed by J. A. Van den Broek, professor of engineering, University of Michigan. Dr. Van den Broek insisted too much attention is paid to elasticity and that in the case of light angles, notably for transmission towers, design is more important.

Experiences with welded structures in Belgium and Luxemburg were described by Leon Rucquoi, director, Institute of Steel Construction for those countries.

Mr. Conley was re-elected president of the institute; Clyde MacCornack, Phoenix Bridge Co., Phoenixville, Pa., first vice president; Edward K. Klingelhofer, Pittsburgh Bridge & Iron Works, Rochester, Pa., second vice president, and T. R. Mullen, Lehigh Structural Steel Co., Allentown, Pa., treasurer.

New directors are: H. E. Brenchley, Minneapolis-Moline Power Implement Co., Minneapolis; Erwin P. Stupp, Stupp Bros. Bridge & Iron Co., St. Louis, and Thomas Leach, Leach Steel Co., Rochester, N. Y.

Emphasize Progress in Accident Prevention

■ Approximately 5000 representatives of industry and safety organizations attended the twenty-eighth National Safety congress and exposition, Atlantic City, N. J., Oct. 16-20.

That the work of safety engineers, educators, psychologists and other accident prevention technicians now has passed the stage of theorizing, speculation and experiment by trial and error was stressed by D. D. Fennell, president, National Safety council.

"It is a fact," said Mr. Fennell, "that safety actually is purchasable today. Furthermore, it is a fact that any state or city or industry literally can determine what its own accident rate shall be."

Following the annual meeting of members, the congress was devoted to sectional sessions, including the metals section.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Oct. 21	Change	Same week 1938	Same week 1937
Pittsburgh	89	+ 3	39	49
Chicago	89	+ 1.5	45	46
Eastern Pa.	72	+ 4	32	47
Youngstown	94	None	57	55
Wheeling	93	None	54	70
Cleveland	90	None	64	65
Buffalo	86	— 2.5	49	58
Birmingham	90	None	57	64
New England	100	+10	70	65
Cincinnati	88	+ 2	70	66
St. Louis	77	+ 2.5	45.5	51.6
Detroit	96	— 2	79	95
Average	91	+ 1.5	51.5	53

PRODUCTION

■ STEELWORKS operations last week rose 1.5 points to 91 per cent, highest since first half of May, 1937. Six districts showed larger activity, slight recession was seen in two, no change taking place in the remaining four. A year ago the rate was 51.5 per cent; two years ago 53 per cent.

Youngstown, O.—Held at 94 per cent with 71 open hearths and three bessemers active. Carnegie-Illinois Steel Corp. has started its second blast furnace at Farrell, Pa. This week the rate is expected to be 95 or 96 per cent as one or two open hearths are added. Sixth blast furnace at Ohio works is scheduled to go in this week, giving Carnegie-Illinois 100 per cent pig iron operation in this district.

Chicago—Increased 1.5 points to 89 per cent, four producers being at 100 per cent and a fifth scheduling all open hearths for this week. This is the highest rate since the week of May 24, 1930.

Detroit—Off 2 points to 96 per cent as Ford took off two small and a large mixer furnace, Great Lakes relighting its one idle unit.

Birmingham, Ala.—Unchanged at 90 per cent; 21 open hearths active.

St. Louis—Advanced 2.5 points to 77 per cent, best rate since the week of Sept. 9, 1937.

Central eastern seaboard — Up 4 points to 72 per cent.

Cincinnati—Gained 2 points to 88 per cent, practical capacity, only one open hearth being idle.

Buffalo—Down 2.5 points to 86 per cent. Indications are for a sharp rise this week as four furnaces under repair will go in soon.

New England—Rebounded to 100 per cent but removal of one furnace, scheduled for this week, will return it to about 90 per cent.

Pittsburgh—Rise of 3 points to 89 per cent is expected to be followed by a further gain this week. Carnegie-Illinois Steel Corp. is resuming tin plate mill operations at Martins Ferry, O., idle since July, 1938.

Wheeling — Continued at 93 per cent, major producers being at practical capacity.

Cleveland—Steady at 90 per cent, active plants continuing at virtual capacity.

Survey Scrap Stocks, Consumption Rate

WASHINGTON

■ Bureau of mines has announced that it will make a survey of dealers' and consumers' stocks and the consumption rate of iron and steel scrap for September. This action is in keeping with the bureau's previously announced policy to present timely data on strategic mineral raw materials. Secretary Ickes is urging "patriotic co-operation" by suppliers and consumers in contributing accurate reports.

The survey is endorsed by the army and navy munitions board. Full co-operation is promised by the American Iron and Steel institute, Institute of Scrap Iron and Steel Inc., and National Association of Waste Materials Dealers.

Copper, Brass Research Association Elects

■ F. S. Chase, president, Chase Brass & Copper Co. Inc., was re-elected president of the Copper and Brass Research association at its eighteenth annual meeting, Hotel Biltmore, New York, Oct. 19. He has been president of the association for many years.

Other officers elected: Vice presidents, John A. Coe, president, American Brass Co.; C. D. Dallas, president, Revere Copper & Brass Inc.; Wylie Brown, president, Phelps Dodge Copper Products Corp.; treasurer, C. D. Dallas; secretary, Bertram B. Caddle.

Following are those elected to the executive committee: J. A. Doucett, Revere Copper & Brass Inc.; C. L. Coe, Chase Brass & Copper Co. Inc.; F. E. Weaver, American Brass Co.; Wylie Brown; W. M. Goss, Scovill Mfg. Co.; H. W. Steinkraus, Bridgeport Brass Co.

The new board of directors includes members of the executive committee and the following: F. S. Chase, C. D. Dallas, John A. Coe, Bertram B. Caddle, R. E. Day of Bridgeport Brass Co.; J. P. Lally, C. G. Hussey & Co.; C. C. Limbocker, Wolverine Tube Co.; H. A. Staples, Phelps Dodge Copper Products Corp.; F. L. Riggin, Mueller Brass Co.; C. P. Goss III, Scovill Mfg. Co.

Hardware Groups Opposed to War; Cautioned "Keep Prices Reasonable"

■ PROBLEMS resulting from the war in Europe were emphasized by speakers addressing members of the National Wholesale Hardware association, American Hardware Manufacturers' association and the National Association of Sheet Metal Distributors in Atlantic City, N. J., Oct. 16-19. That sentiment is strongly against United States involvement found tangible reflection in a unanimous resolution.

Charles R. Hook, president, American Rolling Mill Co., Middletown, O., in addressing the Hardware Manufacturers' association, declared this emergency calls for a realistic attitude by business leadership, and that we may as well admit that democracy is being threatened. With democracy attacked throughout the world as never before, he said, the responsibility of marshaling defense forces falls on business and industry.

"It is your job and mine to merchandise the facts with respect to democracy and free enterprise to our associates in business and in the communities in which we live," said Mr. Hook.

"We can best accomplish this by lending our support to such efforts as the public information program of the National Association of Manufacturers. It is not enough merely to see that the facts are presented to our employes, customers, suppliers and all those directly connected with business. We should also see that the story of the progress and benefits of business is presented to our service clubs, our women's clubs, our teachers, doctors, lawyers, merchants, and all those not directly engaged in industry."

Expects Activity To Increase

In discussing "Problems of our Industrial Life," Dr. Leverett S. Lyon, executive vice president, Brookings institution, Washington, said that if the present war continues we may expect a general increase in industrial activity. This will continue as long as France and England have means of making payment. Government sources, he said, estimate the free purchasing power of these two countries at over ten billions of dollars, including gold deposits and marketable securities. Direct investments in industry here, current gold production and proceeds of exports are not included.

If we become involved, pressure for industrial output from the federal government would be increased, but in this case we would be selling to ourselves and therefore would find it necessary to pay ourselves. As a result, we could expect increased taxes, or the inflationary effects of increased governmental borrowing, or both. In addition, Doctor Lyon predicted that government control of industry would be on a more extended scale than in the last war.

James T. Williams Jr., authority on national affairs and foreign relations, Washington, in discussing the arms embargo, declared that the best that can be hoped for at the present extra session of congress is a makeshift measure repealing the existing act and the substitution of a limited embargo on both raw and finished products. This will permit the shipment of these materials in other than American ships by purchasers taking title and paying cash.

Before the new bill becomes a law, he said, it will probably be amended in an effort to cushion the blow upon our economic life in general and our shipping in particular, by reducing some of the restrictions on American shipping between the United States and Latin America and in the Pacific. Mr. Williams said he did not think the war would end until the issues are decided by force. After it is over, he expects the government will redouble its efforts to negotiate additional trade agreements with many nations.

Forecasts Huge Expenditures

Huge expenditures will be authorized by congress early in the new year, even heavier than previously planned, to provide for the common defense and keep the western hemisphere out of war, Mr. Williams declared. Never have the state, war and navy departments co-operated so well in providing for national defense. Reorganization of our foreign services, which merges the agricultural, commerce and state departments, will aid our business abroad, he believes.

In his presidential address, H. B. Wilson, Mathias Klein & Sons, Chicago, told the hardware manufacturers that industry should resist any price advance, the reason for which cannot be demonstrated clearly. Danger of a runaway market is

False Walls of Sheet Steel Make Storage Space

■ To provide an easily accessible space for storage of reserve stocks, false walls of sheet steel were installed in this Chicago hardware store by Universal Equipment Co., 3500 Arthington street, Chicago. The false walls were set into the room four feet from the outer brick to form a space in which were installed shelving and bins for storing extra hardware items until required to replenish counter stocks. At right under the word "Paints" is an opening through which may be seen shelves built behind the false wall

very real, he warned. "Let us keep the hardware industry what it always has been—a hard-headed, unemotional, but rock-ribbed, solid industry with a normal temperature," he advised.

Mark Lyons, McGowin-Lyons Hardware & Supply Co., Mobile, Ala., president of the wholesale hardware group, said that the industry faces many problems associated with the war as well as certain temptations. He declared that the industry must resist temptation of unwarranted price increases. "In some cases our costs will rise and our prices will have to be raised accordingly," he said. "But I think that most of us are capable of telling the difference between profiteering and legitimate price policy."

America Eating "Seed Corn"

"We cannot expect to sin economically and expect to survive as a nation," Fitzgerald Hall, president, Nashville, Chattanooga & St. Louis railway, Nashville, Tenn., told the wholesalers. Taxes in 1938 were 5 billions greater than in 1934, yet our unemployment increased, he said. Bank holdings of government securities have tripled in the last several years. Insurance companies also are burdened with such securities. Taxes now exceed the money available for dividends.

America has been eating its "seed corn" for years, he said. Restoration of a sound national economy is essential. This cannot be attained until the way is opened to induce investment of private capital in business and industry. He estimated $9500 must be invested for each employe.

Sheet metal distributors held a separate session, and went on record as being unalterably opposed to war. At this session, Mr. Hook commented that steel prices will be advanced but in proportion only to the rise in costs.

E. L. Shaner, editor-in-chief, STEEL, Cleveland, cited figures to show how distributors have improved their position tremendously during the past decade. In 1936-37, the volume of steel passing through distributors' hands was 13.68 per cent of total production. In 1928-29, when total output was comparable, distributors handled only 10.95 per cent.

Comparison of STEEL's distribution figures, he said, "must be gratifying to everyone identified with the distribution of steel through jobbers. They indicate clearly that the important function of the distributor has gained prestige and stature under the most trying conditions ever confronted by American industry. These figures are the statistical evidence of a record of achievement to which every member of this association can point with pride. You have come through the depression with flying colors.

"Your problem now is to consolidate these hard-won gains.

"In the first place you, in common with all producers and manufacturers, should exert every bit of influence you can muster against the unnecessary involvement of this nation in war. Participation by the United States in Europe's present conflict would do more to upset your achievements of the past decade than any other conceivable threat.

"The arbitrary, and necessary, regulations of war, the application of priorities and other restrictions, the direct allotment of materials to essential industries, the excessive taxes, the unwise expansion of facilities and the inevitable post-war adjustments—all would react unfavorably upon distributors."

The more we can sustain an active industry by domestic requirements and the more we can avoid relying upon the support of war orders from Europe, the better off we will be, said Mr. Shaner. He advised that in the long run "one's success depends on the quality of his service to his regular customers," and urged the distributors to serve these regular customers first.

Price Policies Should Be Clarified

Important to all distributors is the fact that today's market is a sellers' market, the editor pointed out, but he cautioned against staging a "Roman holiday" at buyers' expense.

"Instead if common sense prevails, the fortuitous situation can be utilized to clear up some of the acute competitive problems that have plagued the industry. Capitalize the present low-pressure moment by clarifying some of the troublesome issues involved in your relations with mill suppliers and customers."

Present situation also offers an opportune time to promote education on price policy—establishment of a policy against taking business at a price that is unprofitable, Mr. Shaner concluded.

For the past several years, the National Retail Hardware association has encountered considerable success with a "National Hardware Week" for the purpose of promoting increased business for member stores. This year, an even stronger promotional campaign will be conducted with a 10-day "open house" April 25-May 4, 1940. More than 10,000 stores are expected to participate.

In discussing the campaign from the standpoint of the manufacturer, S. Horace Disston, president, Henry Disston & Sons Inc., Philadelphia, said that his field organization found some stores in smaller towns are not co-operating fully. The suggestion also was made that the fall period might be a more advantageous time to conduct open house.

Mr. Wilson was re-elected president of the Hardware Manufacturers' association. Also re-elected were vice presidents Richard Harte, Ames Baldwin Wyoming Co., Parkersburg, W. Va.; P. E. Barth, Sargent & Co., New Haven, N. J.; N. J. Clarke, vice president, Republic Steel Corp., Cleveland. Charles F. Rockwell, New York, continues as secretary and treasurer.

A. W. Howe, J. M. & L. A. Osborn Co., Cleveland, was re-elected president of the sheet metal group; A. J. Becker, Ohio Valley Hardware & Roofing Co., Evansville, Ind., was named first vice president and Eugene Foley, Bayonne Steel Products Co., Newark, N. J., second vice president.

Duquesne Smelting Corp. Organized by I. A. Simon

■ Formation of the Duquesne Smelting Corp. was announced in Pittsburgh last week, organized by I. A. Simon, who has resigned as vice president, Federated Metals division, American Smelting & Refining Co., Pittsburgh.

The company will engage in smelting and refining all nonferrous metals and alloys. Plants and headquarters will be located in the Pittsburgh area. Offices have been established in the Farmers Bank building.

For the past 25 years, Mr. Simon has directed operations of Federated Metals in the Pittsburgh district. Prior to that time he was associated with Duquesne Reduction Co., which merged and became Federated Metals Corp. in June, 1924. Mr. Simon is also secretary, Falk Foundation; vice president of Copperweld Steel Co., Glassport, Pa. Associated with him in the new company are men with wide experience in smelting nonferrous metals.

It is reported initial capitalization will be $1,000,000. Mr. Simon expects the company to be producing metal within 30 days. It will give employment at an early date to 200 to 300 men.

Auto Output Lower

■ Estimated automobile production for the week ended Oct. 21 was revised downward by *Ward's Reports* subsequent to the printing of STEEL's production table, page 30. Revised estimate shows a total of 74,114 units; General Motors, 39,839; Ford, 19.950; Chrysler, 1695; all others, 12,630.

FINANCIAL

YOUNGSTOWN SHEET & TUBE INCREASES NET PROFIT

■ YOUNGSTOWN Sheet & Tube Co,. Youngstown, O., reports third quarter net profit of $765,066, equal to 33 cents a common share, compared to net loss of $727,546 for corresponding 1938 period. For second quarter this year net profit totaled $329,086 or 7 cents per share. Nine months indicated net profit totaled $1,311,259, equal to 41 cents a share; for same 1938 period net loss was $749,042.

REPUBLIC STEEL REPORTS STRONG IMPROVEMENT

Republic Steel Corp., Cleveland, reports third quarter net profit of $2,815,339, equal to $0.38 a common share, in contrast with net loss of $2,387,556 for the period in 1938. For second quarter this year net profit totaled $550,412.49. Comparisons:

Quarters	1939	1938	1937
First	$532,899	$3,062,564*	$5,567,063
Second	550,412	2,856,317*	487,252
First Half...	1,083,311	5,918,881*	6,054,315
Third	2,815,339	2,387,556*	3,237,155
Nine Months	3,898,650	8,306,437*	9,291,470

*Loss.

The company declared a dividend of $4.50 per share on 6 per cent cumulative convertible prior preference stock, Series A, payable Nov. 15 to record Nov. 1.

Truscon Steel Co., Republic subsidiary, reported a net income of $181,832 for third quarter, after deduction for repairs and maintenance expense and provision for depreciation and estimated federal income tax.

Continental Steel Corp.

Third quarter net profit of Continental Steel Corp., Kokomo, Ind., totaled $198,138, equal to 83 cents a common share after deduction of $150,000 reserve for contingencies. This compares with net profit of $192,360, or 75 cents per share for the same 1938 period. For second quarter net profit was $253,128, or $1.06 per share. Nine months net totaled $730,445, equal to $3.07 per share. In the corresponding period last year net profit totaled $403,660, or $1.38 a share.

A. M. Castle Co.

A. M. Castle Co., Chicago, reports third quarter net profit of $65,249, equal to 27 cents a share, compared with net profit of $31,573, or 13 cents per share, for same period last year. Nine months net profit totaled $146,213 or 61 cents a share, while for corresponding 1938 period profits were $156,706, equal to 65 cents a share. Directors declared quarterly dividend of 25 cents a share on 240,000 shares of capital stock outstanding, payable Nov. 10 to record Nov. 1.

Sloss-Sheffield

Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., reports third quarter net profit of $198,232, equal to $1.13 a common share; for same 1938 period net profit was $42,615 or 71 cents a share on 6 per cent preferred stock. Nine months net profit totaled $541,824, equal to $2.61 a share, compared to same 1938 period net profit of $387,051 or $1.17 per share.

Acme Steel Co.

Acme Steel Co., Chicago, reports third quarter net profit of $443,184, equal to $1.35 per share on 328,108 shares of capital stock. In the period last year net profit totaled $110,007, or 34 cents a share, while for second quarter this year net profit was $259,969, equal to 79 cents per share. For nine months ended Sept. 30 indicated net profit was $1,042,825, or $3.18 a share; for same period last year net profit totaled $173,146, or 53 cents per share.

Keystone Steel & Wire

Keystone Steel & Wire Co., Peoria, Ill., reports third quarter net profit of $273,922, equal to 36 cents a share on capital stock, compared with same 1938 period net profit of $83,224. For second quarter net profit totaled $380,738. Net profit for first nine months this year was $972,269; in corresponding 1938 period totaled $574,848.

Rustless Iron & Steel

Rustless Iron & Steel Corp., Baltimore, announces third quarter net profit of $262,045, equal to 27 cents a common share, compared to net profit of $18,983 or 52 cents on preferred stock for same 1938 period. Second quarter net profit was $225,185, equal to 23 cents per share. Nine months net profit was $695,008, equal to 71 cents a share; for corresponding 1938 period net loss was $77,354.

DIVIDENDS DECLARED

A. M. Byers Co., Pittsburgh, declared dividend of $2.17 on preferred stock, representing payment of $1.75 ordinarily due Feb. 1, 1935, and interest thereon to Dec. 1, 1939. Dividend payable Dec. 1 to record Nov. 10.

♦

Clark Equipment Co., Chicago, has declared a 50 cents dividend on common stock payable Nov. 15 to record Oct. 26. Previous payments this year were 25 cents on June 1, 25 cents on Aug. 1 and 25 cents on Sept. 15.

♦

Buckeye Steel Castings Co., Columbus, O., declared 50 cents common dividend, first since December, 1937. Payments of $1.62½ on prior preferred stock and $1.50 on 6 per cent preferred also were declared, payable Nov. 1 to record Oct. 21.

♦

United States Pipe & Foundry Co., East Burlington, N. J., has declared an extra dividend of 50 cents on common stock payable Dec. 20 to record Nov. 29. Regular quarterly dividend of 50 cents previously declared is payable simultaneously.

♦

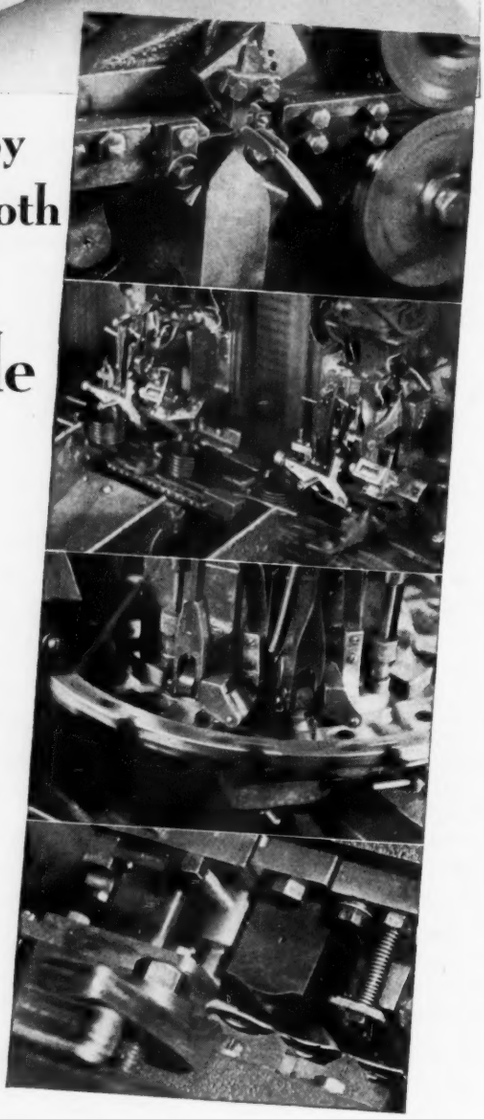
Great Lakes Dredge & Dock Co., Chicago, declared an extra dividend of 25 cents in addition to regular quarterly 25 cent payment. Both will be paid Nov. 15 to record Nov. 2.

Consumers Nine Months Net Income Up 76.5 Per Cent

■ Net profit of 19 companies among equipment manufacturers, suppliers and other leading iron and steel consumers during the first nine months this year totaled $52,086,048, or 76.5 per cent above $29,516,195 reported during the comparable 1938 period. Only two of the group reported a net loss during the third quarter, whereas eight had a deficit in the corresponding 1938 period. In the following tabulation, all figures are net earnings, except where asterisk denotes loss.

	Third Quarter		Nine Months	
	1939	1938	1939	1938
Caterpillar Tractor Co., Peoria, Ill.	$621,325	$364,930	$3,901,155	$2,072,101
Eaton Mfg. Co., Cleveland	351,339	238,830*	1,637,030	589,164*
National Mall. & Steel Castings Co., Cleveland	131,682	347,256*	450,180	1,208,574*
Harbison-Walker Refractories Co., Pittsburgh	518,200	154,700	916,900	348,300
United Aircraft Corp., East Hartford, Conn.	2,120,617	1,142,694	5,799,307	3,564,405
City Auto Stamping Co., Toledo, O.	175,611	64,400	304,564	80,897
Cutler-Hammer Inc., Milwaukee	167,068	168,775*	410,480	244,534*
Stewart-Warner Corp., Chicago	55,948	145,579*	256,209	538,889*
Transue & Williams Steel Forging Co., Alliance, O.	898	48,535*	373	178,672*
Westinghouse Elec. & Mfg. Co., E. Pittsburgh	2,731,023	1,712,221	9,069,810	6,212,823
Florence Stove Co., Gardner, Mass.	422,068	331,505	770,304	469,136
Glenn L. Martin Co., Baltimore	546,154	768,393	1,513,778	2,140,993
General Electric Co., Schenectady, N. Y.....	8,652,439	4,371,300	25,022,631	17,548,256
American Brake Shoe & Fdry. Co., New York	406,954	272,921	1,326,888	758,135
Container Corp. of America, Chicago.....	253,060	16,145	285,308	104,106*
Mullins Mfg. Corp., Salem, O.	2,088*	141,511*	115,592	459,466*
Central Foundry Co., New York	29,097	91,338*	40,233	270,405*
Worthington Pump & Machinery Corp., Harrison, N. J.	360,470	80,146	265,306	251,191
Marion Steam Shovel Co., Marion, O.	12,534*	154,770*	89,066*	440,338*

HUMAN FINGERS MECHANICAL HANDS



It takes a happy combination of both to fabricate

Barnes-made Springs

Skilled hands are matched by machines equally facile in their adaptability to the amazing twists and turns in spring manufacture. Just what this means to you as a user of springs may best be expressed in terms of:

QUALITY

PRICE

DELIVERY

All three considered, you'll find that Barnes-made Springs are the economical buy.

Springs

THE WALLACE BARNES CO.

DIVISION OF ASSOCIATED SPRING CORPORATION

BRISTOL • CONNECTICUT

SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

Windows of WASHINGTON

By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ PRICES during this war are following a course strikingly different from that of 1914, Secretary of Commerce Harry L. Hopkins has pointed out.

Last month's spectacular spurt comprised a general movement embracing all basic commodities, while after outbreak of war in 1914 and up to the last quarter of 1915, price increases were less substantial and more selective.

Apart from rubber, tin and sugar, which doubled in price during first weeks of hostilities in 1914, prices of other commodities generally remained relatively steady, Secretary Hopkins asserts.

War in September, 1939, has affected commodity prices in quite different manner. Prices climbed immediately, within the first week most basic commodities making substantial gains in both spot and future quotations.

Many factors apparently indicate that development of European orders during present hostilities may be fully as slow as during the first World war, the secretary warns. Today's business plans should not be based on calculated increases in foreign buying. Duration of the conflict itself is uncertain.

Sounds Inventory Warning

There is danger, Hopkins believes, of undue accumulation of inventories. This may have a temporary effect in spurring business, but cannot long continue a stimulating factor. To the extent that inventory accumulations are speculative, they are a threat to stable prices and production.

To sustain current levels of business activity there is need for greater consumption by the public as well as expanded exports and increased capital expenditures by business. Any material rise in prices of finished goods may curtail consumption and have an unfavorable reaction on business early next year, Hopkins declares.

TREND IN STEEL PRICES UNDER STUDY BY ADMINISTRATION

Steel prices unquestionably are being closely watched here. Official circles are looking for signs as to the industry's price intentions for the first quarter next year.

Government economists have been studying the entire price structure for some time. Steel prices interest them most of all.

At a press conference recently newsmen queried the President about steel prices. He said that the government was watching the situation. When the same subject came up last week he said there was no news as yet.

Officials naturally are conversant with the fact cost of raw materials used in production of steel has gone up during recent months, and realize that steel itself must follow suit sooner or later. It is evident they will not be greatly surprised if the price of steel is moved up for the next quarter.

All Washington is now price-conscious. Prices are perturbing not only the government but industry itself, as was clear last week when the commerce department's business advisory council devoted most of its meeting here to this subject.

Big question is whether industry can control the situation or whether the government will eventually step in. It is known the administration has no desire for such a task.

Secretary of agriculture has discussed prices with his agricultural advisory council. It was decided arbitrary control of food prices is not required. The secretary and council, it is reliably reported, were assured by the President that in his opinion they are able to cope with the situation, and should there be future need for control of food prices the department of agriculture and not the war department will administer controls.

Justice department already has been studying prices for some time, and the President recently called upon TNEC to do the same. Extreme New Dealers have been insisting it is time for the government to step in and assume control, but this is not the administration's view.

HANES URGES SOUND TAXING STRUCTURE

Government can effectively contribute to industrial development, re-employment and economic recovery through a fair and intelligent tax structure, Undersecretary of the Treasury John W. Hanes declared last week.

Discussing the communications he has received from industry in connection with his current tax study, Mr. Hanes said he could not predict at this time "for obvious reasons" what disposition would be made of the suggestions which have come in. Digest of the letters received on taxes from industrial leaders, and digest of hearings held before treasury experts will, however, be presented to a subcommittee of the house ways and means committee in the near future.

"One thing is indisputable about the present tax system," Mr. Hanes said. "Notwithstanding the enormity of its yield it does not yet produce sufficient revenue.

"Thus we are brought to these questions: Does it operate in the manner best calculated to foster the national economy? Does it contain elements whose removal would promote the national economy and still maintain or even increase the tax yield? Can this yield be increased without serious impairment of the economic structure?

"In considering these questions it is obvious we must bear in mind three important factors: (1) until a relatively short time ago business was lagging; (2) late shrinkage

in industrial plant account; (3) present shortage of venture capital. To the extent that our national tax system contributed or now tends to perpetuate any of these factors it should be revised."

MANGANESE BIDS OPENED BY TREASURY DEPARTMENT

Treasury department opened bids Oct. 19 for purchase of manganese under terms of the strategic materials act authorizing federal expenditure of $100,000,000 for stockpiles of vital war materials. Of this sum congress made available $10,000,000 for expenditure in 1939. Manganese bids were the first taken under the legislation.

Of 15 bidders, 8 offered domestic ore and 7 foreign ore. Origin of the foreign ore would be Russia, South Africa, Cuba and Chile. Domestic material was offered from Montana, New Mexico, West Virginia, Virginia, Colorado, Utah and California.

Owing to the many factors involved it is impossible to determine the low bidders until bids have been reviewed by the procurement division and the army and navy munitions board which fixed specifications. However, prices were generally in line with those quoted during 1937, although there was a sharp rise from the last quotation this year. Offers were made in lots ranging from 3000 to 40,000 tons.

It is noted no offers were received from India, the African Gold Coast or Brazil, which in the past have supplied a portion of needs in this country. All bids offering foreign ores carried escape clauses "in event shipping is hampered by the war or other causes."

Domestic bidders: R. L. Gilmore and D. A. Kendall, Los Angeles; L. E. Kramer, Tooele, Utah; Domestic Manganese & Development Co., Butte, Mont.; Greenbrier Mining Corp., White Sulphur Springs, W. Va.; Luna Manganese Co., Deming, N. Mex.; F. W. de Friess, Grand Junction, Col.; and Oliver & Co., Inc., Cleveland.

Foreign bidders: Watson, Geach & Co. Inc., New York; H. S. Davis Co., New York; Debevoise-Anderson Co. Inc., Newark, N. J.; Derivatives Inc., New York; Wm. H. Muller & Co. Inc., New York; Cuban-American Manganese Co., New York; and Leonard J. Buck Inc., Jersey City, N. J.

TREASURY OPENS BIDS FOR CHROMIUM, TUNGSTEN ORES

Treasury department's procurement division last week opened bids on chromium and tungsten ore, to be purchased for federal stockpiles under the strategic materials act.

Bidders offered chromium ore from California, Oregon and Alaska; tungsten from Nevada, California, Arizona, Isle of Pines and China.

Chromium offers: United States Chrome Mines Inc., San Francisco, 45,000 tons domestic, $1,575,000; Dorothea Reddy Morony, San Francisco, 25,000 to 45,000 tons Alaskan, $875,000 to $1,575,000.

Tungsten offers: Metal & Ore Corp., New York, 425 tons domestic at $2500 per ton; Wah Chang Trading Corp., New York, 150 tons domestic at $2450 per ton, and 425 tons Chinese at $1582 per ton excluding duty; Pan American Tungsten Corp., Havana, Cuba, 100 tons from Isle of Pines, at $1800 excluding duty.

STEEL WAGE CASE TO GO TO SUPREME COURT

Justice department's legal experts who are co-operating with the department of labor in connection with the court action dealing with the proposed minimum steel wage have determined to file a petition in Supreme Court for a writ of certiorari.

Officials of both departments have been studying the decision in which the court of appeals of District of Columbia upheld the small steel companies in their stand on the labor department's minimum wage determination under the Walsh-Healey act. By appealing to the Supreme Court they will have two opportunities to win their case, whereas if they went into the lower court as suggested by the court of appeals they would have but one appeal.

SEE NO CHANGE IN BELGIAN TRADE PACT

Committee for reciprocity information has completed its hearings in connection with the Belgian trade agreement, and there is now talk there will be no new pact.

Secretary of State Hull entered into negotiations with Belgium for a new agreement before the European conflict began. Hostilities have changed the whole picture and some officials here indicate it is probable no change will be made.

AWARDED STEEL CONTRACTS FOR CALIFORNIA PROJECT

Columbia Steel Co., San Francisco, has been awarded a contract for furnishing 2,674,900 pounds of steel reinforcement bars for Central Valley project in California. Bids were received Sept. 7 at Denver by the bureau of reclamation.

American Bridge Co., Denver, was awarded a contract to supply five structural steel coaster gate frames at $85,874 for use on the same project.

FOUR FIRMS SHARE $6,000,000 BRAZILIAN RAILWAY ORDERS

Contracts for sale of 17 locomotives and 1000 cars to the Central do Brazil railway have been signed by four American firms, the transportation division of department of commerce announces.

Companies shared orders totaling nearly $6,000,000, the 17 motor-gage locomotives costing $1,870,000, and 1000 cars more than $4,000,000.

STEEL HEARINGS BEFORE TNEC MOVED BACK TO OCT. 30

Steel's hearing before the temporary national economic committee will be in charge of Hugh Cox, it has been announced.

Hearings now are to open Oct. 30, having been postponed twice, once from Oct. 16 to Oct. 23, and again to Oct. 30. Dates were changed because TNEC has taken longer with its oil hearings than had been anticipated.

GOVERNMENT IRON, STEEL PURCHASES TOTAL $1,471,322

During the week ended Oct. 14 the government purchased $1,471,322.18 worth of iron and steel products under the Walsh-Healey act as follows: Heppenstall Co., Pittsburgh, $41,360; Camden Forge Co., Camden, N. J., $30,988.31; Pennsylvania Forge Corp., Philadelphia, $46,900.10; Harrisburg Steel Corp., Harrisburg, Pa., $12,783.13; Winters & Crampton Corp., Grandville, Mich., $30,065.55; Newton Junior Co., New Haven, Conn., $14,000; Legion Utensils Corp., Long Island City, N. Y., $13,825; Mattatuck Mfg. Co., Waterbury, Conn., $14,040; R. Hardesty Mfg. Co., Denver, $11,880; Bradford Supply Co. Inc., Wayne, O., $17,745; The Ohio Seamless Tube Co., Shelby, O., $38,901.28; Inland Steel Co., Chicago, $28,120; Acme Steel Co., Chicago, $14,142.07; Allegheny Ludlum Steel Corp., Watervliet, N. Y., $51,203.35 (estimated); Bethlehem Steel Co., Bethlehem, Pa., $54,439.68 (estimated); Carpenter Steel Co., Reading, Pa., $54,186 (estimated); Youngstown Sheet & Tube Co., Youngstown, O., $36,689.31; Central Iron & Steel Co., Harrisburg, Pa., $153,465.75 (estimated); Washburn Wire Co., New York, $30,580.19; Condenser Service & Engineering Co. Inc., Hoboken, N. J., $31,347; Edge Moor Iron Works Inc., Edge Moor, Del., $41,000; W. S. Rockwell Co., New York, $10,920; Simplex Wire & Cable Co., Cambridge, Mass., $13,580.81; John A. Roebling's Sons Co., New York, $16,040; R. L. Rettew & Co., Lebanon, Pa., $68,541; Bethlehem Steel Co., Bethlehem, Pa., $27,455.54; Carnegie-Illinois Steel Corp., Boston, $20,376.20; Crosby Co., Buffalo, $22,364.43; Somaron Sheet Metal Works Inc., New York, $12,000; Bethlehem Sheet Co., Bethlehem, Pa., $449,345; Mitchell Metal Products Inc., Cleveland, $21,300; and Clayton & Lambert Mfg. Co., Detroit, $41,737.48.

AVIATION

ENGLAND, FRANCE TAKE 75 PER CENT OF HEAVY EXPORTS

■ RECORD shipments of American warplanes were dispatched to Britain and France in the last few days before war was declared and our arms embargo went into effect, it is revealed by department of commerce reports. During August exports of aircraft, engines and parts to Britain totaled $5,221,926, to France $4,601,260.

These two nations are estimated to have accounted this year for at least 75 per cent of our aeronautics exports. For the first eight months shipments to all buyers aggregated $70,186,620, some 43 per cent above the same period in 1938.

Planemakers now are rushing production on their unfilled orders for the allies. Lockheed Aircraft Corp. last week began flying 60 bombers from its Burbank, Calif., plant to Newark, N. J., there to be stored in readiness for speedy delivery in event the embargo is lifted.

Should congress kill the ban on arms shipments, British and French military missions in this country and Canada will place with American makers orders for some 5000 aircraft costing complete more than $300,000,000, it is authoritatively reported. Not to be greatly discounted is such an estimate. Fighting and bombing planes are a most pressing need for the allies. Certain it is that with embargo repeal their buying here would be concentrated on such equipment.

How soon builders could deliver on large new orders may only be conjectured. Already highest in its history is the aircraft manufacturing industry's $325,000,000 backlog. One firm, Glenn L. Martin Co., Baltimore, alone has some $65,000,000 in uncompleted orders, more than the entire industry's total output for 1935. Talk of domestic expansion in air defenses beyond that now projected is already causing some concern over likelihood of bottlenecks in several directions.

Skilled Labor Shortage Feared

Possibility of a general shortage of skilled labor, seen most acute in the aeronautical field, has been studied in a war department report recently completed and now in the hands of an interdepartmental committee before submission to the President.

To make available complete data on sources for aviation gasoline, vital need in a national emergency, the bureau of mines proposes a monthly survey of this industry. All producers of high-octane flying fuels would be sent questionnaires dealing with capacity, normal production, reserve stocks and sales.

No shortage of necessities will be experienced by the aircraft industry because of the war, declares Irving H. Taylor, chief of export division, Aeronautical Chamber of Commerce, Washington. Although the chamber has not yet completed a scheduled survey of raw materials required by plane and engine builders, it is asserted the United States has virtually inexhaustible sources of such supplies.

Seeking reduction in aircraft costs, army air corps last week requested the national research council of National Academy of Sciences, Washington, to study new aeronautical materials and production methods. Council will analyze the potentialities of plastics, glass, alloys and other materials.

War department soon will begin work on a new $8,000,000 air base near Holyoke, Mass. Initial expenditure of approximately $3,600,000 will involve steel hangars, shops, service buildings, power house and transformer station.

Order for engines costing $833,880 was placed last week by the war department with Lycoming division of Aviation Mfg. Corp., Williamsport, Pa.

Admittedly caught unprepared for currently zooming traffic, airlines are contracting for larger equipment on a scale they had not anticipated would be necessary for several years.

Transport Builders Active

Last week Transcontinental & Western Air Inc., Kansas City, Mo., announced it has ordered five 33-passenger, four-motored "stratoliners" from Boeing Aircraft Co., Seattle. United Airlines, Chicago, recently signed a contract with Douglas Aircraft Co. Inc., Santa Monica, Calif., for seven 21-passenger DC-3 models costing $870,000. Booking airline orders for more than 50 transports within the past few weeks, Douglas now is adding 2500 men to its payroll, bringing total employment to 12,000.

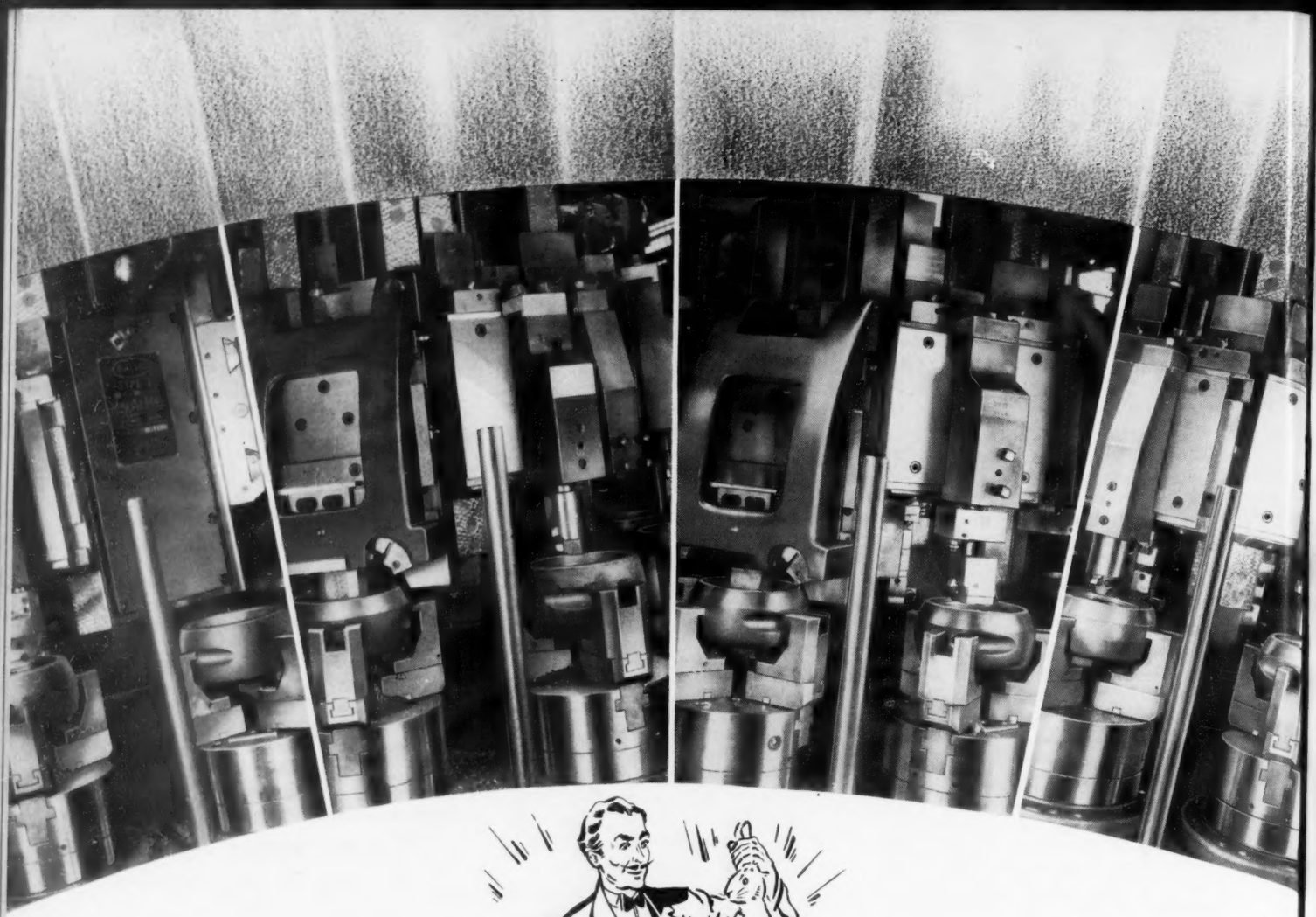
Expansion of its Paterson, N. J., engine plant with a 300,000-square foot addition is proposed by Wright Aeronautical Corp. Firm recently booked a $7,000,000 air corps award.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., plans to expand its production of electrical parts and equipment for aeronautical use, it has been disclosed by A. W. Robertson, chairman. A specific program is not formulated as yet.

An airplane fueling hose of a new inorganic synthetic rubber-like material which is not deteriorated by gasoline or other petroleum products has just been developed by B. F. Goodrich Co., Akron, O. With a special stranded stainless steel wire woven into its braid, hose will harmlessly ground any static electricity that may be present in a refueling ship.

Four-Bladed Innovation in Airplane Propellers

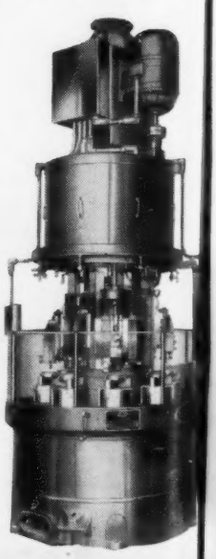
■ **Presaging a new trend in aircraft propellers is this four-bladed controllable metal "prop." First such unit in American aviation, it was developed by Curtiss Propeller division of Curtiss-Wright Corp., Clifton, N. J., to demonstrate that high power of modern engines is best absorbed by using additional blades rather than increasing diameter. Testing plane shown is a Curtiss P-36A army pursuit. During flight this craft's streamlined landing gear retracts into wing recesses**



Any *Magicians* in the Audience?

Step up and see how Bullard has worked out the trick of being in 8 places at once. Take this inner housing for example—follow it across the page from left to right. You see it in 8 places, something different happening at every place—and all at the same time. Simple, isn't it?

What's the magic about that? It's a fact that finished parts are produced at the rate of 55 per hour when it used to take nearly ten times as long. The company who owns this Type "J-7" Bullard Mult-Au-Matic finds it extremely satisfying and profitable magic. Today, more than ever, plants are looking for production magic. Call in a Bullard Engineer and let him tell how it will work in your operations.

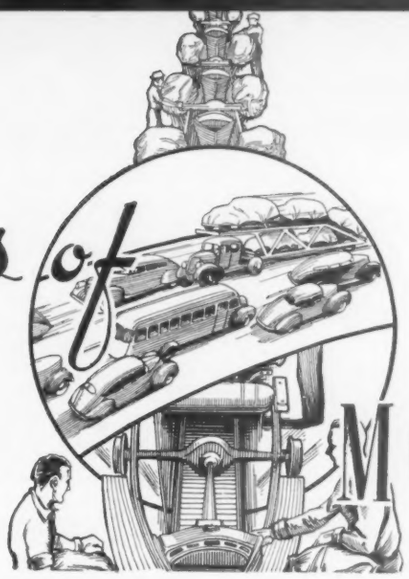


THE BULLARD COMPANY

BRIDGEPORT, CONNECTICUT

BULLARD

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

Material appearing in this department is fully protected by copyright, and its use in any form whatsoever without permission is prohibited.

DETROIT

■ SLOWDOWN, "blood brother to the sitdown strike" as K. T. Keller of Chrysler Corp. calls it, is being called a new weapon in the labor union bag of tricks, but there is really nothing new about it; rather the public's attention is being called to the technic which has been practiced in one form or another ever since sitdown strikes were outlawed in 1937. The slowdown would appear to be a much more potent club than the sitdown, for it avoids the necessity of calling a strike yet leaves management no retaliatory measure other than dimissing working forces and suspending operations.

Workmen so dismissed soon become eligible for unemployment compensation to which the company must contribute a large share. In the slowdown at the Dodge plant here, the working force was summoned to jobs each morning, rang in, and then was dismissed after half an hour or an hour of operations in which the slowing down of work to 50 per cent of normal speed made it impossible to keep pace with other plants geared to normal assembly pace. Of course, as long as the men kept reporting for work they were employed and could not file claims for compensation even though no actual work was being done.

The slowdown is a vicious thing and the only way it can be detected is to note the decrease in production per shift. A man on the assembly line may appear normally busy and a foreman cannot charge him with loafing but if only 50 or 75 per cent of the finished work is coming through in a certain period that formerly was obtained, then a slowdown is apparent.

Workmen participating in such tactics, after being sent away from their jobs, would congregate in beer gardens and restaurants and laugh their heads off at the confusion their slow-motion methods caused, all the while union leaders were claiming to the management no slowdown had been ordered. Everyone knows, however, that slowdowns are ordered by the union officials. One case is cited where a union officer telephoned a factory manager at one plant and said that the next morning in the motor division, production would be slowed down 25 per cent. Promptly at the hour he named, output fell off exactly as he forecast.

Specific information on two instances of slowdowns in the Dodge plant is supplied by the management. One centered in the "body-in-white" assembly department where bodies pass in turn over a battery of three major assembly fixtures. Comparison of 1940 sedan operations with the 1939 sedan shows:

	1939	1940
Number of men	11	11
Clamps required in welding	79	67
Welding guns required	16	14
Number of spot welds	699	642
Jobs per hour	12	8½

Thus, with no decrease in man power and with a 15 per cent reduction in clamps, a 12½ per cent reduction in number of welding guns to handle, and an 8.2 per cent reduc-

Chart Course for New Chevrolet Models

■ Four General Motors executives chart course for 1940 Chevrolet models. Left to right, W. S. Knudsen, president; W. E. Holler, general sales manager of Chevrolet; M. E. Coyle, general manager of Chevrolet; and Charles F. Kettering, General Motors vice president in charge of research

tion in number of welds, production, instead of increasing, fell off 29 per cent.

Similar situation prevailed in production of cylinder block cores in the foundry.

Labor inefficiency of this sort is not peculiar to the motor plants, but has spread to a wide range of parts suppliers as well, complicating their problems enormously. Earlier in the season, when prices were being quoted on parts for 1940 models, the usual amount of price shaving was made to acquire business by some of these companies, leaving only a small margin between cost and selling price, with costs based on an expected labor output comparable to that of last year. More than one manufacturer has found his labor efficiency possibly only 75 per cent of last year's and his expected profit entirely dissipated. What can he do? It is too late to change contract prices, and there appears as yet no way of obtaining guarantees from labor of a fair day's work for a fair day's pay.

Adding to the confusion is the fact that a number of parts suppliers have been forced to work overtime to meet expanded schedules of motor plants. Original prices were figured on 8 hours' time, five days a week, but hiking of schedules may have forced the plants to go to 11 hours for six days, necessitating overtime pay for 26 hours per week.

Added Shift Impractical

One obvious answer might be to put on another 5-day 8-hour shift, but it has been discovered that inefficiencies resulting from double-shift operations exceed the extra cost of overtime wages for one overtime shift. Further, the added volume of output does not make up for the extra labor costs involved, and prices to the motor companies cannot be increased because contracts have been let and any upward movement would have to be reflected in increased retail prices of cars, already announced by the car builders.

Refusal to accept additional releases might mean loss of all the business to a competitor willing to meet the terms involved, and while it is all well and good to say an industry should take steps to regulate unfair competitive elements in its ranks, this has been demonstrated to be impractical and unAmerican.

The lot of vendors to the automotive industry is not getting any happier. It seems they are always "in the middle." When raw material prices go up, they have to protect their customers in advance for long periods ahead, but when prices are declining, they must pass along savings to customers as fast as prices fall. They may spend thousands of dollars on new plants and new equipment to give their customers a better product in larger quantities, but when the automobile market is depressed they are left holding the bag with their expensive machinery and plant idle and no one to help them stagger along with the overhead.

And yet the auto companies cannot be blamed too severely for trying to buy at the best possible figure. That is why they have elaborate and expertly-trained purchasing executives. Many so called sharp buying practices are nothing more than a reflection of shilly-shallying tactics by some unit in a supplying industry and if one motor company does not seize an open price advantage, then a competitor will and some purchasing official will be looking for a job.

It must be admitted that vendors in Detroit are notorious for crying in their beer over alleged advantages being taken of them. At the same time it must be remembered that hundreds of fortunes have been made for suppliers as a result of automobile purchases and it is only fair to expect intelligent administration of these profits in bad times to assure their continuation in good.

Large buyers are recognizing some of the difficulties of vendors and on more than one case are lending a helping hand. One interest here is proposing to take one unit of a supplying industry, study its methods and costs, perhaps even examining cost sheets and making recommendations, then to establish a fair price for the product, permitting a reasonable profit for the supplier, and setting up this price as a guiding light to what will be paid to all comers. This interest would even go so far as to refuse to consider any prices under this established level, no matter from what other supplier they might come. Quality and service alone would be the determining factors in awarding business. This may well be the coming millennium in the purchasing phase of the auto industry.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	226,952	356,950
Feb.	383,900	202,597	317,517
March	519,022	238,447	389,489
April	553,231	237,929	354,263
May	540,377	210,174	313,214
June	521,153	189,402	324,235
July	456,909	150,450	218,478
Aug.	405,072	96,946	103,343
8 mos.	3,778,850	1,552,897	2,377,489
Sept.	175,630	89,623	•192,000
Oct.	337,979	215,286	.....
Nov.	376,629	390,405	.....
Dec.	347,349	406,960	.....
Year	5,016,437	2,655,171	.....

•Estimated.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
Sept. 23	53,950	20,390
Sept. 30	62,755	25,405
Oct. 7	76,095	37,665
Oct. 14	75,860	50,540
Oct. 21	79,429	68,360

†Comparable week.

	Week Ended Oct. 21	Oct. 14
General Motors	44,839	34,260
Chrysler	1,570	10,025
Ford	19,950	18,900
All others	13,070	12,675

■ CHRONOLOGY of 40 years of improvements in the motor industry, compiled by the Automobile Manufacturers' association, reflects the steady engineering progress made in automobiles, so typically an American achievement. Year by year, a few of these milestones are:

1900 "Mass production" of motor cars first employed. Sales of all manufacturers total 4192.

1901 First American speedometer made.

1902 Alloy steels used in making automobiles.

1903 First car to cross continent took 61 days to do it.

1904 Headlamps included as standard equipment.

1905 Tire chains introduced.

1906 Front bumpers and electric horns pioneered.

1907 Price of cars averaged $2131.

1908 Left-hand drive popular.

1909 First closed bodies built.

1910 Bodies began first trend toward "streamlining."

1911 Electric starting, lighting and ignition first combined in a single system with storage battery.

1912 Windshields made as part of the body by one company.

1913 One company attained record production of 1000 cars a day.

1914 Motor workers daily wage raised to $5.

1915 Top and windshield became standard equipment.

1916 Steel frame body introduced.

1917 Disk wheels appeared.

1918 Tire sizes standardized.

1919 High pressure chassis lubrication adopted.

1920 Windshield wiper universal.

1921 Hydraulic brakes on some cars.

1922 Balloon tires appeared.

1923 First closed cars made to sell for less than $1000.

1924 Bumpers became standard equipment.

1925 Four-wheel hydraulic brakes and all-steel bodies used.

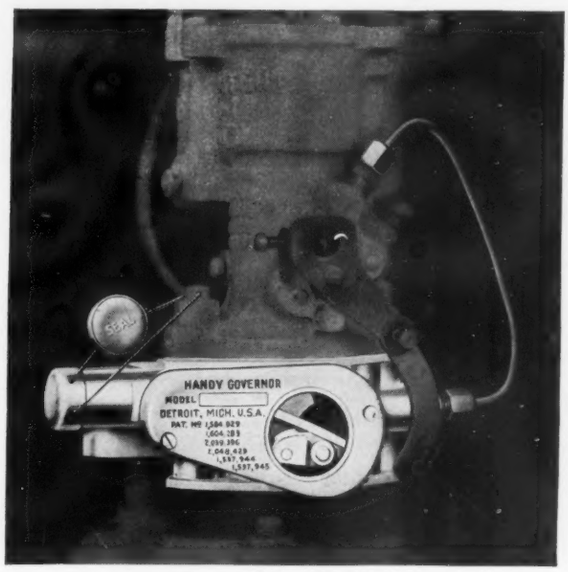
1926 Rubber engine mountings,

(*Please turn to Page* 73)

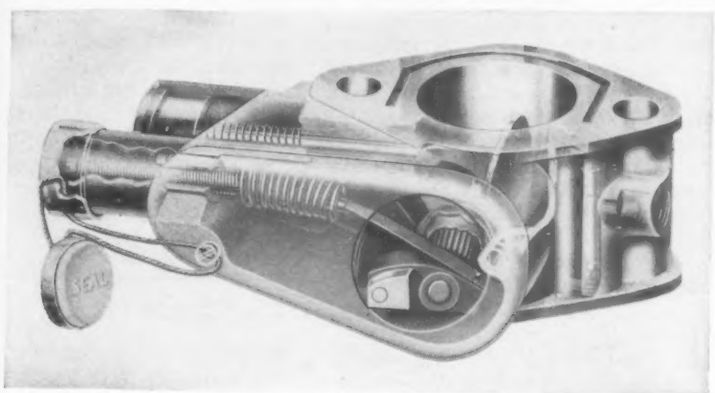
TORRINGTON NEEDLE BEARINGS

INSURE QUICK RESPONSE IN HANDY GOVERNORS

The Handy Governor is the mileage meter of the highways—quick to respond to changes in engine load.



The Handy Governor offers distinctly new features in simplicity, accuracy, and speed range.



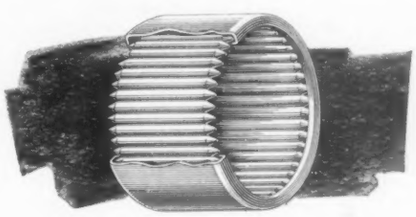
Phantom view of the Governor shows location of Torrington Needle Bearing on the throttle shaft assembly.

QUICK RESPONSE to changes in engine load is absolutely essential in the Handy Vari-Speed Governors used by leading truck manufacturers and operators everywhere. The throttle shaft assembly—one of the three moving parts in the governor—must move freely and without friction.

"To insure the absence of friction at this point," says the Handy Governor Division of King-Seeley Corporation, "our engineers selected Torrington Needle Bearings. So successful has been the use of these bearings that in many cases the operation of Handy Governors is comparable to that of mechanical governors."

Speedy response and smooth operation are not the only advantages found by Handy engineers in the use of the Torrington Needle Bearing. "There is a distinct advantage from the construction angle through the use of the Needle Bearing," reports Handy. "The bearing is so constructed that there is a great saving in vertical space and because of the bearing design we are able to use standard throttle shafts having no special shoulders."

This adaptability to product designs is characteristic of the Torrington Needle Bearing. Because of its simple construction and small diameter, it introduces no design complications; in fact, it frequently offers opportunities for simplification in the design of surrounding members, with consequent savings in space, weight, and cost.



Let the Torrington Engineering Department show you how these and other advantages of the Needle Bearing—low cost, high radial load capacity, thorough lubrication—can be incorporated in your own product designs. For further information write for catalog No. 10. For Needle Bearings to be used in heavier service request Booklet No. 103X from our associate, Bantam Bearings Corporation, South Bend, Ind.

The Torrington Company
ESTABLISHED 1866
Torrington, Conn., U.S.A.

Makers of Ball and Needle Bearings

New York Boston Philadelphia Detroit
Cleveland Chicago London, England

TORRINGTON
NEEDLE BEARING

Science Looks at Democracy, War

■ MACHINE power equivalent to the labor of more than 50 slaves is working for each American, Dr. Karl T. Compton told the Society of Automotive Engineers in New York last week. Dr. Compton, president, Massachusetts Institute of Technology, Cambridge, Mass., discussed the role of science in social planning, in removing causes of war and in its relationship to democracy.

Advances in productive power, he said, have made possible great progress in social planning. He warned, however, there is danger of losing the benefits of science through policies adopted with altruistic intentions but with a fatal lack of understanding of fundamental considerations.

Objectives of the greatly expanded social security program are laudable, but it is possible such programs may be pushed beyond the present limits of science's power to support them. Should this happen, the entire structure of social security and high standards of living may fall.

Science, said Dr. Compton, can contribute only indirectly in removing causes of war. However, science has given man a method of gaining the good things of life without robbing others and without working inordinately long and hard to obtain them. Technology offers a means to produce materials, the lack of which has been responsible for many conflicts.

Motor Fuel from Coal

The speaker declared that in the not too distant future a satisfactory motor fuel will be produced from coal economically. Great Britain then will not be dependent on Persian oil fields.

He declared when substitutes for rubber are produced satisfactory for automobile tires, one of the great causes for international haggling will be removed. Chemical agriculture may remove danger of food shortages.

Development of suitable lacquers as substitutes for tin in coating containers for canned foods will make the United States less anxious about access to Bolivian and Malayan tin supplies. To the extent science can produce these materials or suitable substitutes, to that extent will be removed almost the only real basis for war.

As to the place of science in the democratic way of life, Dr. Compton warned America not to succumb to easy temptation to surrender its birthright of freedom for temporary social security, but to make democracy work.

Really new and epoch-making discoveries do not spring from regimentation, he said, but rather from individual genius in an environment favorable to the man who is different—the pioneer. Science and democracy flourish together.

"Reciprocally, science can do much for our democracy. This fact is vividly proved by consideration of our present great national problems: Unemployment, low earnings, agricultural surpluses, hazards of flood, drought, fire and certain diseases. Science can contribute in a major way to solution of every one of these problems. It can provide new industries with employment and profits; it can find new uses for farm products; it can prevent or reduce hazards and disease.

"Unfortunately, science can be prostituted to bring destruction rather than happiness; and democracy can insidiously lapse into communism on one hand or authoritarianism on the other. Let us be alert to avoid these dangers, and to reap the benefits of science, and to make democracy work for the preservation of a reasonable individual freedom."

Machine Tool Builders To Revise Order Index

■ Recent conditions in the machine tool industry have emphasized difficulty of determining what may be regarded at this time as firm orders for the purpose of the industry's index of new business. In view of this the National Machine Tool Builders' association is constructing a revised index to more nearly reflect the industry's activity. New data may be available within a month or two.

Indications are that both domestic and foreign volume in September will show some increase over August, but the uncertainty as to firm character of pending export business qualifies what may be regarded as the actual volume of firm orders.

Rustless Places Equipment Contract

■ Rustless Iron & Steel Corp., Baltimore, which is materially increasing plant facilities, recently placed a contract with Wellman Engineering Co., Cleveland, for engineering, designing, constructing and installing a three-unit Wellman-Galusha clean-gas generating plant, with building and accessories; four gas fired ingot heating furnaces; two gas-fired billet heating furnaces, and a 2000-pound floor-type ingot charging and drawing machine.

MEETINGS

MANAGEMENT GROUP WILL CONSIDER PREPAREDNESS

■ HOW American industry can control unit costs through more efficient plant facilities, as it now becomes the world's remaining big-scale producer of goods, will be the theme of the annual production conference of the American Management association at the Palmer House, Chicago, Nov. 15-16.

Raymond S. Perry, vice president, Ingersoll Milling Machine Co., Rockford, Ill., and vice president of the production division, will present an address on "Are You Ready for Expansion?"; and Albert Kahn, president, Albert Kahn Inc., Detroit, will speak on "Building Design as a Factor in Production Efficiency."

Other topics scheduled are: Plant layout and auxiliaries affecting unit costs; plants of tomorrow in operation today; problems confronting production executives; lighting for production; heating, ventilation and air conditioning as factors in production efficiency; and effect of air conditioning on employe comfort, health and efficiency.

MEEHANITE RESEARCH GROUP ARRANGES ANNUAL MEETING

Annual meeting of the Meehanite Research Institute of America Inc. will be held in Detroit, Nov. 1-3, with about 100 representatives of member companies from the United States, Canada and Australia attending. More than 50 papers describing results of research conducted by members on all phases of foundry practice and applications of castings will be presented.

BLAST FURNACE AND COKE GROUPS IN JOINT MEETING

Eastern States Blast Furnace and Coke Oven association and Blast Furnace and Coke Association of the Chicago District will conduct a joint meeting at the University club, Cleveland, Nov. 10. Separate sessions of the blast furnace and coke oven groups are scheduled for the afternoon, with wartime requirements as the general theme. A banquet will be served in the evening. G. W. Hewitt, production manager, blast furnace and coke works, Wheeling Steel Corp., Wheeling, W. Va., is chairman of the meeting.

TRAFFIC MEN TO HOLD CONVENTION IN CHICAGO

Eighteenth annual convention of the Associated Traffic Clubs of America will be conducted in Chicago, Nov. 6-8. Headquarters will be at the Palmer House.

What's New at Pittsburgh . . .

By R. L. HARTFORD
Pittsburgh Editor, STEEL

■ RE-ESTABLISHMENT of Follansbee Bros. moved nearer last week as William B. Paul, company's counsel, announced in federal district court here that more than $2,500,000 has been obtained to carry out a modified reorganization plan.

Program calls for a $1,200,000 modernization project at firm's Follansbee, W. Va., plant. Principal feature is a new cold reduction mill. Striking similarity between this plan and the original one submitted by bondholders nearly six years ago is noted by some observers.

Total of $2,500,000 has been pledged as follows: $1,850,000 from the RFC; $250,000 from three creditor banks, the National City, Union National and First National, all of New York; and the balance from sale of common stock.

According to Mr. Paul, there already is a subscription list of well over $500,000 on this common stock, $275,000 of which is to come from the Follansbee interests.

Proponents of the plan indicate a new management would be set up, since both RFC and the banks retain right to withhold funds unless management meets with their approval. Salaries, court costs and other payments also are subject to approval of the lending parties.

Temporary postponement has been granted until Nov. 1 while details are worked out, but it now seems certain that new management will take over the company reins shortly.

•

More Furnaces in Blast

Blast furnace activity continues upward here, with 39 of the district's 50 stacks in operation. Of the 11 idle units, relining is going ahead on at least 4, while an additional 4 need only patching before they are ready to go. Three stacks require complete rebuilding.

Activity of some of these stacks in producing hot metal for the "duplexing" process indicates that operations may reach a new high. Peak in 1937 was attained during May when 42 stacks were blowing. Current schedules show at least one additional stack going in before the close of October and two or possibly three more in November, depending on the relative position of iron supply and scrap prices as well as available quantities of ore.

Estimates now forecast a further slight increase in both bessemer and open hearth operations before a leveling-off point is reached.

•

New Planishing Mill

Designed to give luster to dull coated wire without removing or damaging the coating, a new planishing mill has been introduced by Lewis Foundry & Machine division, Blaw-Knox Co. Unit is small, resembling a pilot mill, but is a production machine.

Developed at a wire producer's request, the device eliminates necessity of die drawing to brighten the wire. Die process results in some loss of casting.

Mill is a two-pass unit with the two roll stands mounted at 90-degree angles with each other in order to insure complete planishing of the wire. Motive power is applied through the winder, which keeps pace with the wire production line. Wire comes to the unit from the coating bath in rough coils. It is set on reels, drawn through the mills and rewound into finished coils. Entire unit weighs 1600 pounds. Company engineers indicate it may also be adapted for use as a sizing mill at the end of a rod mill roll train.

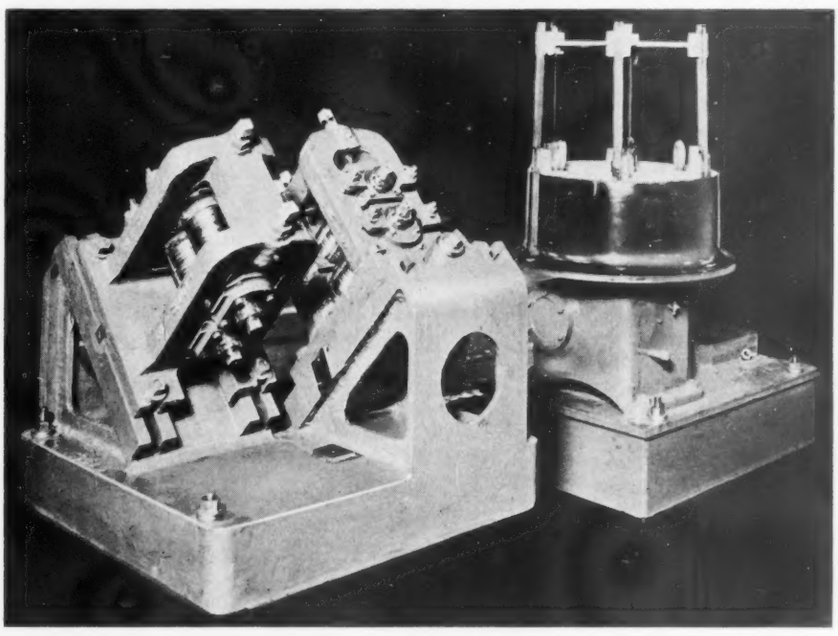
•

Relief Rolls Shrinking

Upturn in private industry is reducing Pennsylvania's relief rolls, according to H. L. Russell, secretary of the state's department of public assistance.

During the first week of this month the relief load was reduced by 3608 cases, accounting for 11,903 persons. Since the opening of September, rolls have declined 7561 cases, or 33,031 persons.

Allegheny county, most of which is in the Pittsburgh city limits and where the principal industry is steel, showed the greatest decline, decreasing the rolls by 1898 cases.



■ **Rolling action of Lewis Foundry & Machine division's new planishing mill imparts luster to wire without removing or damaging the coating**

"Best Month Since 1937" For Porcelain Enameling

■ August was the porcelain enameling industry's best month since October, 1937, according to department of commerce. It was the seventh consecutive month in which value of shipments exceeded last year.

Shipments reported by 55 manufacturers increased 23.8 per cent over July of this year and 37.4 per cent over August, 1938. For the first eight months their shipments totaled $19,245,774, more than 22 per cent ahead of the corresponding period last year.

September Foundry Orders Show Increase

■ Foundry equipment orders in September were well above those of August, but shipments were smaller, according to the Foundry Equipment Manufacturers' association, Cleveland. Comparisons follow, indexes based on 1922-24:

	Sept. 1939	Aug. 1939	Sept. 1938
Net orders	184.4	131.4	78.7
Shipments	132.6	143.8	84.2
Unfilled orders	174.9	123.1	97.3
3 mos. av. gross orders	143.3	126.8	79.1

MEN OF INDUSTRY

■ H. G. WALTER, formerly vice president, Gerrard Co. Inc., Chicago, maker of wire strapping machines, has been elected president. He has been with the Gerrard organization 13 years, serving first as secretary and then vice president. Adolf Larsen, general sales manager, has been elected vice president in charge of sales.

♦

Francis G. Collura, of Cleveland, has been named eastern design director for Designers for Industry Inc., with headquarters at 630 Fifth avenue, New York.

♦

O. N. Lindahl, controller, Universal Atlas Cement Co., Chicago, United States Steel Corp. subsidiary, has been elected president, Controllers Institute of America.

♦

Gregory M. Buenzli has resigned as counsel for the Wisconsin State Securities division to become general manager and counsel for the Wisconsin Foundry & Machine Co., Madison, Wis.

♦

Stuart J. Swensson, secretary, American Hot Dip Galvanizers association, was elected a director, American Trade Association Executives at the annual meeting in Rye, N. Y., recently.

♦

Myron C. Taylor, former chairman, United States Steel Corp., New York, and chairman of the Intergovernmental Committee for Refugees, has been chosen for the 1939 medal for the promotion of better understanding between Christian and Jew in America given annually by the *American Hebrew* magazine.

♦

E. A. Schwarzenberg, E. A. Schwarzenberg Co., Cleveland, was honored at a dinner meeting of the northern Ohio chapter, Institute of Scrap Iron and Steel Inc., Hotel Statler, Cleveland, Oct. 17, for his contributions to the advancement of the scrap industry during his 57 years' association with it. Phil Frieder, Phil W. Frieder Co., Cleveland, on behalf of the chapter presented Mr. Schwarzenberg a gold wrist watch.

♦

Willard A. Terry, for several years associated with the welding section of General Electric Co.'s industrial department in Schenectady, N. Y., has been assigned to new duties in the company's Philadelphia office, effective Nov. 1. He will have charge of electric welding sales along the Atlantic seaboard, including Philadelphia, Norfolk and Pittsburgh. C. I. MacGuffie, arc welding specialist in the company's Atlantic district, will take over Mr. Terry's duties in the industrial department.

♦

C. W. Hedler and R. L. Miller have been promoted to assistant sales managers, Norma-Hoffmann Bearings Corp., Stamford, Conn. Both have been members of the general sales staff for a number of years. Wesley G. Sargent, mechanical engineer, formerly with Frick-Reid Supply Co., Pittsburgh, has been named assistant to Mr. Hedler, who will continue in charge of distributors' sales.

H. G. Walter

♦

O. W. Earl, associated with Mullins Mfg. Co., Salem, O., 13 years, recently as assistant general sales manager, has been promoted to general sales manager. Prior to joining Mullins he was identified with the automatic stamping operations at the Chrysler Corp.

♦

John Wilder, president, Wilder Metal Products Co., Niles, O., has been elected president, Niles Bank Co., to fill the vacancy due to death of Jacob D. Waddell, president, Waddell Steel Co. John P. Hosack, vice president, Mahoning Valley Steel Co., and D. J. Finney, both of Niles, have been elected vice presidents.

♦

D. E. Gamble, of Chicago, has been named president, Pump Engineering Service Corp., Cleveland, a subsidiary of Borg-Warner Corp. Mr. Gamble for 11 years has been vice president and general manager of the Borg & Beck division, Chicago, manufacturer of automotive clutches. He will continue in that capacity.

Ralph H. McOuat will continue as general manager and has been elected vice president of the Pump Engineering Service Corp.

♦

James S. Knowlson, chairman of the board, Stewart-Warner Corp., Chicago, has been elected additionally as president. He succeeds J. E. Otis Jr., who resigned recently to become president, Dodge Mfg. Co., Mishawaka, Ind. Frank Ross, senior vice president, has been elected a director to fill a vacancy.

♦

Willard A. Steiger has recently become associated with the Urick Foundry Co., Erie., Pa., as sales representative in central and eastern Pennsylvania and New York state, with headquarters at 815 Lancaster avenue, Syracuse, N. Y. He formerly was with Brown-Lipe-Chapin Co., Syracuse, N. Y.

DIED:

■ LEONARD B. TOMB, 68, purchasing agent, Oster Mfg. Co., Cleveland, Oct. 14 at his home in Euclid, O. Mr. Tomb had been with the company 21 years.

♦

Joseph H. Shaw, 61, president, Phoenix Brass Fittings Corp., Irvington, N. J., in that city, recently.

♦

Howard L. Babcock, vice president, treasurer and a director, Easy Washing Machine Co., Syracuse, N. Y., in that city, Oct. 15.

♦

William Smith Peddie, a director and treasurer, Minneapolis-Moline Power Implement Co., Minneapolis, in that city, Oct. 6.

♦

Lenus McClane, 89, in Rockville Centre, N. Y., Oct. 15. Mr. McClane was consultant to various steel firms, retiring in 1934 after an association of over 20 years with the Robert W. Hunt Co. as its representative in northern New York. At one time he was superintendent, Albany Iron & Steel Co., Troy, N. Y.

♦

James B. Crawford, 69, credited with rolling Birmingham's first steel plate, Oct. 15 at Birmingham, Ala. He went there 56 years ago from Sharon, Pa., and was identified with the old Linn Iron Co., later absorbed by Tennessee Coal, Iron & Railroad Co. In 1911 he and E. B. Vaughn organized the Vaughn Boiler & Locomotive Works, a partnership dissolved only a few years ago.

Machine Tool Show in Vermont

■ BECAUSE of cancellation of the national machine tool show which was to have been held in Cleveland, a group of Vermont machine tool builders consisting of Cone Automatic Machine Co., Windsor; Jones & Lamson Machine Co., Bryant Chucking Grinder Co., and Fellows Gear Shaper Co., Springfield, co-operated in exhibits at their individual plants, Oct. 16-19.

More than 500 attended, some from Detroit and Chicago. A large delegation came from Canada.

Not only were machine tools, which would have been shown at Cleveland, set up and running, but the four plants were open for inspection and guided tours conducted during the four days.

Important Machine Tool Center

The Springfield-Windsor region is an important center in the machine tool industry, and is one of the oldest. Machine tools have been built there more than 100 years and it was there that the turret lathe originally was developed.

All four of the companies are lineal descendants from the Robbins & Lawrence Co., one of the most influential of the early American machine tool concerns.

All four now occupy large, modern plants and make use of the latest equipment. The Cone company, building automatics, employs 500; Fellows, building gear cutting machinery, cutters and accessories, 600; Jones & Lamson, building turret lathes, automatic lathes, thread grinders, optical comparators and threading tools, 800; and Bryant, building grinding machines, 400.

These companies are locally owned and managed, and to a large extent are manned by workmen who are natives of the locality and who have learned the business of machine tool building in the Springfield-Windsor shops.

Toledo Metal Industries Operating at Capacity

■ Heavy demand for iron and steel products has brought metal industries in Toledo, O., to capacity operations.

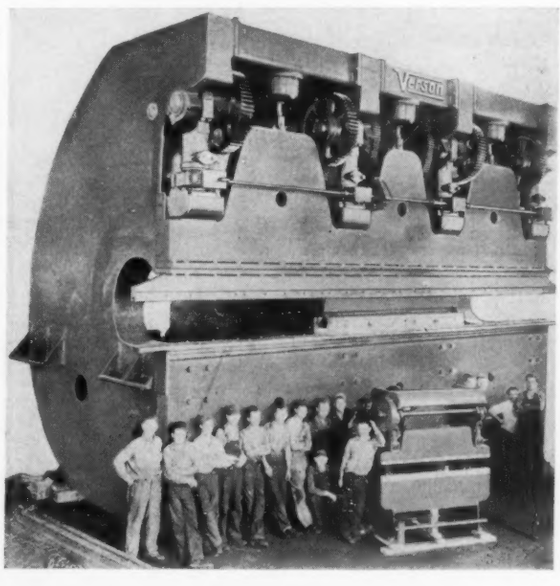
Coal and ore vessels are busy. Interlake Iron Co., which operates one of the largest merchant furnaces in the Great Lakes area, is producing pig iron at capacity. Shipyards have a large volume of repair work. Steel castings and metal stamping plants all are working normal forces.

Willys-Overland Motors Inc. is turning out more than 250 cars daily, has 3500 production workers on payrolls.

On the basis of reports from a group of typical plants it is believed approximately 15,000 more workers are employed now than at the same time last year. Large increases have been noted in the last six weeks.

■ Factory sales of mechanical stokers in August totaled 15,058 units, against 9525 in July and 12,859 in August last year, the bureau of the census reports. Sales for eight months totaled 51,263 this year, 45,412 in 1938 and 54,550 in 1937.

"Largest and Most Powerful Press Brake"



■ Reported by its builders, Verson Allsteel Press Co., Chicago, to be "the largest and most powerful press brake ever built," this machine weighs 440,000 pounds, is used to fabricate steel plates for barge sections. It is capable of bending a ⅝-inch plate 33 feet long to a 90-degree angle at one stroke. Seven freight cars were required to ship it. Its size may be visualized by comparison with the smaller press brake in the foreground, and workers

Activities of Steel Users, Makers

■ TOLEDO Scale Co., Toledo, O., has begun manufacturing in its new factory, said to be the largest plant in the world for making automatic weighing devices. The factory by Albert Kahn Inc., which replaces the six old plants the company had developed in its 40 years of growth, covers 250,000 square feet. It is of steel frame type, with special adapted steel roof trusses, and walls of brick and glass.

♦

J. M. Cranz Co., distributor for Hewitt Rubber Corp. in the Buffalo territory, is now established in new quarters at 1280 Main street, Buffalo.

♦

John S. Barnes Corp., Rockford, Ill., has established a district sales office at 503 New Center building, Detroit, with Arnold J. Werner in charge.

♦

Mid-Continent Iron & Steel Inc., Tulsa, Okla., has been organized to engage in scrap brokerage. L. H. Frazen is president.

♦

National Sheet Steel Co., Detroit, has established a Chicago warehouse at 3135 California avenue, and will deal exclusively in sheets. S. S. Fox is manager of the new branch.

♦

New Wrinkle Inc., Dayton, O., has licensed the St. Louis Surfacer & Paint Co., St. Louis, and the Allied Finishing Specialties Co., Chicago, to manufacture Wrinkle finish varnishes.

♦

Unfilled orders of International Machine Tool Co., Indianapolis, are reported to have increased substantially since recent acquisition of the entire common stock of the company by Clearing Machine Corp., Chicago. Operations at the International plant, now a wholly-owned subsidiary of Clearing, are continuing uninterrupted.

♦

T. B. Woods Sons Co., Chambersburg, Pa., has appointed the following distributors for power transmission machinery: Louisville Mill Supply Co., Louisville, Ky.; M. D. Larkin Co., Dayton, O.; M. L. Erlenmeyer, Elmira, N. Y.; Boyer-Campbell Co., Detroit; Berger Bros. Electric Motors Inc., Rochester, N. Y. The company has established a warehouse in Newark, N. J., with Henry D. Clark as district representative to serve distributors in northern New Jersey and the New York metropolitan area.

Editorial

The Business Outlook

■ BUSINESS in steel and in some branches of the metalworking industry is booming. The period in which sharpest gains have been recorded dates from start of the European war. What is the relation between the foreign situation and present activity? What will be the influence of continued hostilities on industry in the future? And what share of recent business improvement represents anticipatory buying, rather than demand to cover actual early requirements?

Opinions on these matters vary widely. Probably it is natural for some observers to be suspicious of an acceleration in business that coincides exactly with the outbreak of a major war. The lush markets enjoyed by United States manufacturers in 1914-1918 and the soaring commodity prices of that period still are vividly in mind. How soon should industry prepare itself for a return of such conditions?

Producers Say Heavier Orders Come From Increased Domestic Demand

Pertinent is the viewpoint of Col. Leonard P. Ayres who last week declared the "chief responsibility for the increases in activity which produced the strong advance in the September figure must be accorded to heightened activity by corporations, due to the anticipation of receiving war orders, rather than to greater production actually resulting from such orders."

On the other hand, steel producers in particular and industry in general have pointed out on numerous occasions the past few weeks that the heavier orders they have received lately are almost entirely from domestic consumers for the manufacture of products intended for domestic consumption.

Business was improving for three months before Hitler struck. Industrial production, as measured by the federal reserve index, rose from 92 in May to 102 in August. Consumers' inventories of steel products were low because price weakness encouraged hand-to-mouth buying. Railroads were considering extensive purchases of equipment and track material, partly to compensate for postponed buying the previous 18 months.

Ample Reason To Expect Continued Business Recovery into Next Year

When war broke out, commodity prices in this country spurted. Steel prices promptly strengthened, and buyers rushed to cover forward needs in order to avoid higher quotations and delayed deliveries. The fact that the large majority of steel users, including the railroads and automotive industry, entered the market simultaneously—some to place requirements for six months—accounts for the unprecedented swelling in backlogs.

Inventories are being expanded; this cannot continue indefinitely. Either domestic consumption must increase further or export business must be available if current activity is to continue far into 1940. To a considerable extent the outlook hinges on European developments. At the same time, there appears ample reason for an extension of the business recovery which had its inception in peacetime, even though it proceed at a slower pace than at present and without the added stimulus of war-fostered orders.

The BUSINESS TREND

Rate of Industrial Activity Nears 1937 Peak Levels

■ INDUSTRIAL activity continues to expand, although in some lines close to capacity operations have been reached. However, still higher operating levels will probably be attained in the weeks immediately ahead, for old and more expensive operating equipment are rapidly being reconditioned. On the basis of the heavy backlog of orders now on hand, close to peak operations seem assured through the remainder of this year.

While orders are being placed more cautiously, there has not been anything like a return to the hand-to-mouth buying basis prior to the pre-war months. The more normal pace of buying the past week or two has failed to ease the delivery situation, which is becoming increasingly acute in some lines.

During the week ended Oct. 14, STEEL's index recorded the fifth consecutive weekly advance to touch the highest level since the week ended July 17, 1937. The index now stands at 113.9, a gain of 1.4 points over the index figure of 112.5 recorded the previous week ended Oct. 7, and remains substantially above the 84.3 level registered by the index in the comparable week last year.

Steelmaking operations advanced 2 points to 89.5 per cent during the week ended Oct. 14, and is approaching peak operations for the industry, currently being above 90 per cent of ingot capacity. Temporary shutdowns of some open-hearth furnaces for repairs may tend to keep

STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL) AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
PER CENT
125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 0
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1938
1939

STEEL'S index of activity advanced 1.4 *points to* 113.9 *in the week ended Oct.* 14:

Week ending	1939	1938
July 29	86.8	69.0
Aug. 5	83.5	66.9
Aug. 12	83.9	66.9
Aug. 19	82.2	70.5
Aug. 26	83.4	70.3
Sept. 2	86.3	72.3
Sept. 9	83.7	66.8
Sept. 16	97.5	72.9
Sept. 23	103.0	74.0
Sept. 30	107.9	74.9
Oct. 7	112.5†	78.9
Oct. 14	113.9	84.3

†Revised.

Mo. Data	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan.	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
Feb.	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
March	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
April	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
May	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
June	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
July	83.5	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
Aug.	83.9	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
Sept.	98.0	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
Oct.	....	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2	78.8	107.1
Nov.	....	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4	71.0	92.2
Dec.	....	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

steelworks operations from rising much above the present rate. The national steel rate now is at the highest level since the latter part of May, 1937.

Reflecting the labor trouble within the Chrysler plants, motor car assemblies for the industry failed to continue the normal seasonal advance during the week ended Oct. 14. Production in that week totaled 75,860 units, compared with 76,095 the preceding week and with 43,095 in the corresponding week last year.

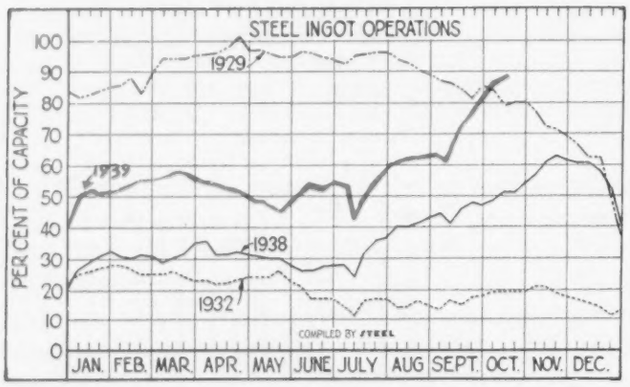
The Automobile Manufacturers association estimate September factory sales of motor vehicles totaled 200,780 units. The September total represents a gain of 94 per cent from August and is 124 per cent above the September, 1938, figure.

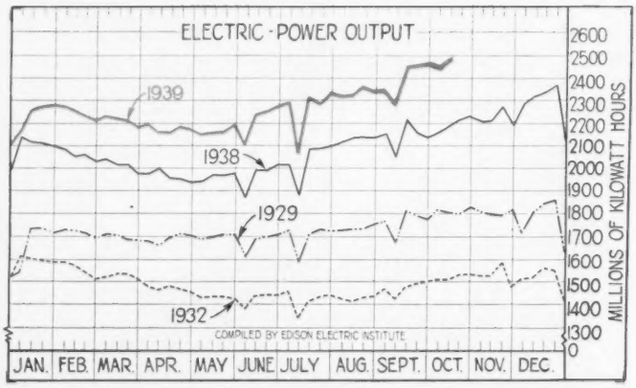
Electric power output soared to a new all-time high during the week ended Oct. 14, reflecting directly the increase in general industrial activity as well as seasonal factors. In that week power consumption totaled 2,494,630,000 kilowatt-hours an increase of 14.3 per cent over the like 1938 period. In the week ended Oct. 7, electric power output amounted to 2,465,230,000 kilowatt-hours.

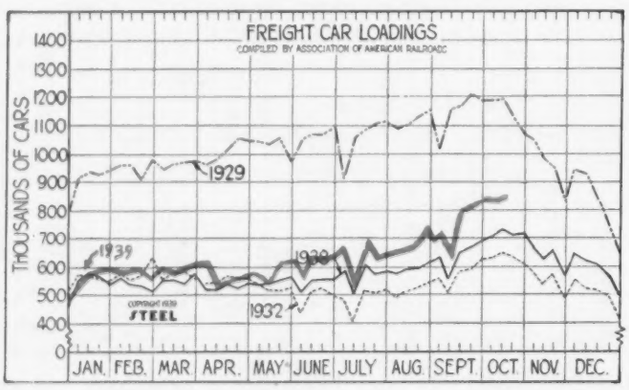
Revenue freight carloadings increased slightly more than seasonal during the week ended Oct. 14, to 844,955 cars. This represents a gain of 1.2 per cent compared with the preceding week and was 4.8 per cent above the total for the corresponding week in 1937.

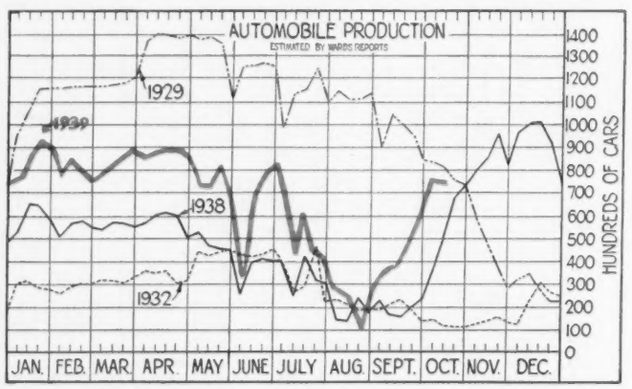
SEPTEMBER CONSTRUCTION CONTRACTS GAIN

Value of construction contracts awarded during September in the 37 eastern states, totaled $323,227,000, according to F. W. Dodge Corp. This compares favorably with construction awards during August of $312,328,000 and also exceeds total awards valued at $300,900,000 recorded during September, 1938. The rise in volume of construction during September was the fourth consecutive month that an increase was reported, however the September total remained below the peak this year of $330,030,000 recorded in April. The decline in public works construction last month was more than made good by the improvement in residential, utilities and non-residential divisions. In the first nine months this year construction awards represented an increase of 22.7 per cent over the comparable 1938 period.



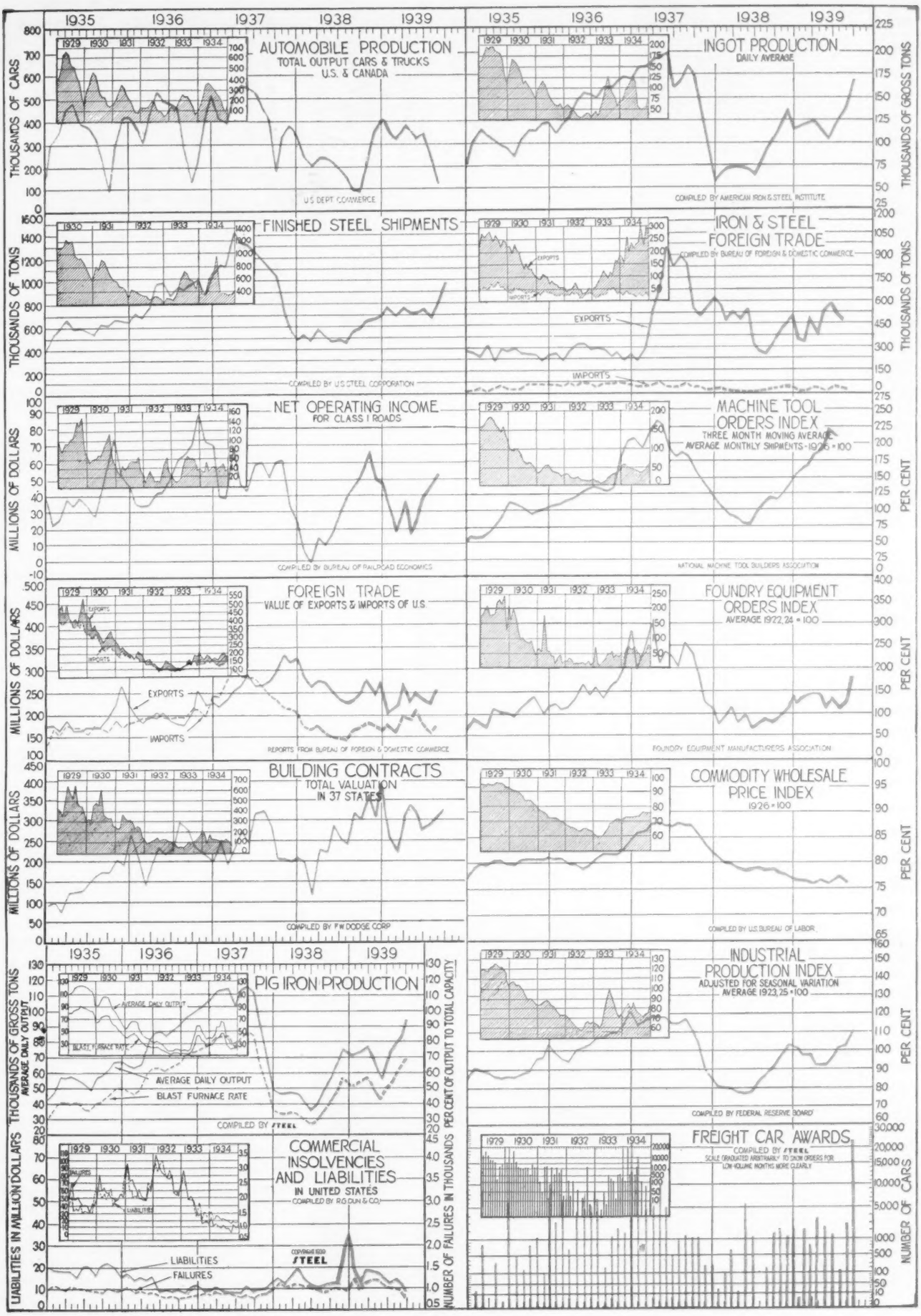


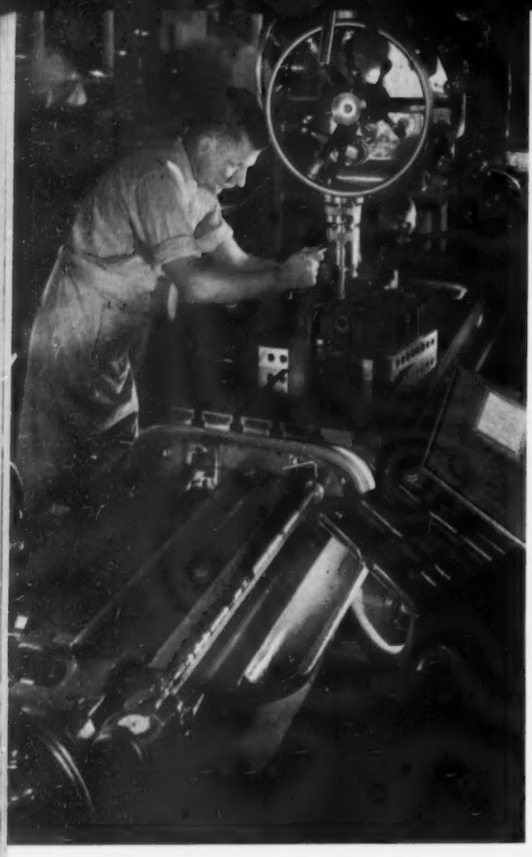




Week ending	Steelworks Operating Rate Per Cent 1939	1938	1932	1929	Electric Power Output Million KWH 1939	1938	1932	Freight Car Loadings Thousands of Cars 1929	1939	1938	1932	1929	Weekly Auto Output 1939	1938	1932	1929
July 8	42.0	24.0	12.0	95.0	2,078	1,881	1,341	1,712	559	501	416	1,065	42,784	25,375	26,560	113,586
July 15	50.5	32.0	15.5	95.5	2,234	2,084	1,415	1,727	674	602	504	1,079	61,610	42,010	29,870	115,075
July 22	56.5	36.0	16.5	96.0	2,295	2,085	1,433	1,723	657	581	502	1,101	47,420	32,070	46,375	123,512
July 29	60.0	37.0	16.5	96.0	2,342	2,094	1,440	1,725	660	589	511	1,104	40,595	30,390	22,461	110,163
Aug. 5	60.0	40.0	14.5	94.0	2,325	2,116	1,426	1,730	661	584	497	1,091	28,250	14,771	23,591	114,364
Aug. 12	62.0	40.0	14.5	93.0	2,333	2,134	1,415	1,733	661	589	512	1,100	24,875	13,790	21,162	111,939
Aug. 19	63.5	41.5	15.5	90.0	2,368	2,139	1,431	1,750	674	598	518	1,136	12,955	23,940	19,568	111,902
Aug. 26	63.5	43.5	14.5	89.0	2,355	2,134	1,436	1,762	689	621	538	1,160	18,365	18,700	19,896	113,316
Sept. 2	64.0	44.5	13.5	87.5	2,357	2,149	1,464	1,675	722	648	561	1,017	25,240	22,165	19,561	90,913
Sept. 9	62.0	41.5	15.5	86.0	2,290	2,048	1,423	1,806	667	569	501	1,153	26,865	17,485	21,586	104,351
Sept. 16	74.0	46.0	15.0	84.5	2,444	2,215	1,476	1,792	806	660	587	1,166	41,245	16,100	23,116	100,042
Sept. 23	79.5	48.0	17.0	82.0	2,449	2,154	1,490	1,778	815	676	596	1,202	53,950	20,390	19,327	95,453
Sept. 30	84.0	47.0	18.0	85.0	2,470	2,139	1,499	1,819	835	698	622	1,179	62,755	25,405	13,265	83,201
Oct. 7	87.5	48.5	19.0	84.0	2,465	2,154	1,506	1,806	835†	703	625	1,179	76,095	37,665	14,568	82,088
Oct. 14	89.5	51.5	19.5	79.0	2,495	2,183	1,507	1,799	845	727	650	1,186	75,860	50,540	12,675	81,882

†Revised.


AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1925 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
EXPORTS
IMPORTS
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACTS
TOTAL VALUATION IN 37 STATES
COMPILED BY F.W. DODGE CORP
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923,25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES
FAILURES
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARITHMETICALLY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
THOUSANDS OF CARS
THOUSANDS OF TONS
MILLIONS OF DOLLARS
THOUSANDS OF GROSS TONS
PER CENT
NUMBER OF CARS
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
PER CENT OF OUTPUT TO TOTAL CAPACITY
1935
1936
1937
1938
1939



■ GAGING as practiced in connection with modern machine tool performance, in many instances means much more than the mere act of measuring parts in the process of being machined or of checking them after machining has been completed. It is becoming more and more common to find gaging to be an actual function of the machine tool—either through accurate "dial settings" of the cutting tools, or by "size control" through some other means integral with the machine.

Fifteen or twenty years ago, at a time when "split thousandths" began to be considered seriously in practical manufacturing circles, the question frequently was asked, "How—under these conditions—is inspection going to keep pace with production?" Thinking in terms of the toolroom, some manufacturing men had the idea that the time was not far away when there would be more people engaged in the inspection of parts than there would be in their production. Some of them believed that the economies in production effected by improved machine tools would be wiped out by increased costs of inspection. They thought that interchangeable manufacturing at last had been carried too far, so far in fact that it was about to become impractical and uneconomical.

Like numerous other forecasts of doom which have beset the course of American manufacturing development, this one proved to be unfounded. What the gloomy forecasters failed to take into account was that engineering minds in America are not one-track minds. They did not realize that the same brains which made possible mass manufacturing to split thousandths were also quite capable of working out mechanisms and methods whereby gaging and inspection would be able to keep pace with that kind of production.

Result of Co-operation

The remarkable achievements in this direction have not been due to the efforts of any one man, or any one company—nor have they been achieved by any one means. Instrument makers, machine tool builders, opticians, electrical engineers, physicists, tool makers, production engineers and many others have had a hand in it. Mechanical, pneumatic, hydraulic, optical, electrical, magnetic and electronic means are being employed. Today mechanisms of these various types are being built into, or used in connection with rugged production machine tools—mechanisms which only a few years ago were unknown outside of a few research laboratories, and which would have been considered out of the question except possibly in the inner sanctum of a gage shop.

Any attempt to do more than to touch very lightly on just a few of the numerous systems of production gaging is impossible in an article of this character. Each system, and each device developed under each system, is deserving of a long

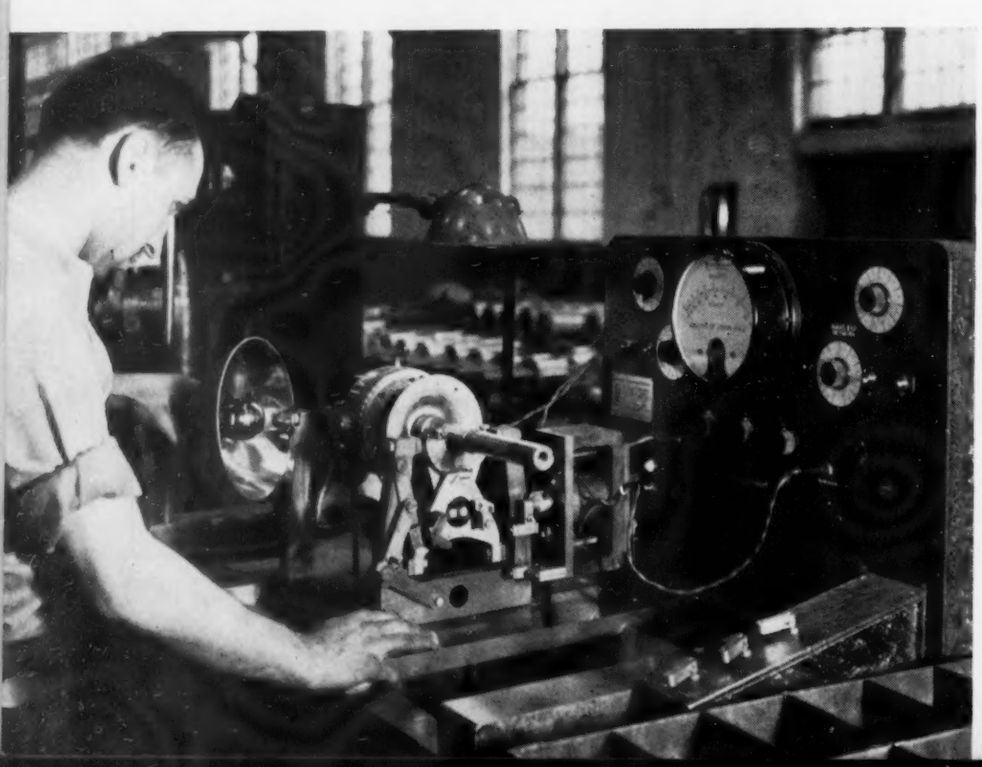


Fig. 1. (Top)—In this Pratt & Whitney jigboring machine gaging is a function of the machine itself. The table is set to a tenth of a thousandth through use of gage blocks and dial indicator on the bed at the operator's right

Fig. 2. (Center)—Final piston inspection at Chrysler Corp. involves use, at this point in the production line, of at least $10,000 worth of gages. Among them are electrical gages which check top and bottom of the four ring grooves; and indicator gages for checking diameters within 0.00025-inch

Fig. 3. (Bottom)—Another important form of gaging is that of balance. Here is shown the dynamic balancing of the die-cast rotor of a Westinghouse motor, through use of a stroboglow balancing machine

GAGING METHODS Keep Pace

WITH PRODUCTION DEVELOPMENTS

By GUY HUBBARD
Machine Tool Editor

engineering paper. This article is intended to be simply an "eye-opener" to the general revolution in machine shop practice which has been brought about through recent developments in gaging. Developments still are going on so rapidly in this field that it is going to be a dynamic subject for a long time to come.

From the days of the first crude caliper, down to the days of the micrometer and the vernier, measurements in the metalworking industry depended mostly on the human touch, or "feel" as it is called in shop circles. Touch or "feel" is exceedingly delicate. It is possible to "feel" a thousandth or less with the tips of the fingers and skilled workmen undoubtedly can feel a thousandth or less with a pair of spring calipers.

"Feel" Is Deceptive

At the same time touch or "feel" is a very deceptive thing. If you don't believe that, cross two fingers and "feel" the end of your nose with the fork or "snapgage" thus formed. This gage will tell you that you have two noses. Simple feeler gages will fool you almost as badly on mechanical tests—especially on screw thread tests. "Feel," like many other human sensations, never can be standardized, and therein lies one of its greatest weaknesses as a basic function in modern interchangeable manufacturing. Just as it has been necessary to augment the power of the human eye by the microscope when dealing with minute objects, so also has it been necessary to augment the human power to judge size and surface finish—this by various scientific devices for minute measurements.

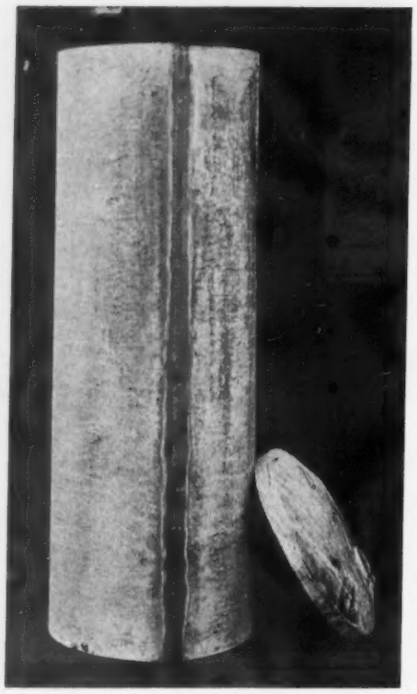
One of the first steps toward solving the gaging problem in connection with production machine tools, was the use of precision lead and feed screws in connection with accurately divided, direct reading dials and drums for the control of the elements actuated or set by these precision screws. Take a modern turret lathe for example. Through the use of such dials and screws, it now is possible for the operator—after getting a basic setting on the cross slide—to carry through a series of different diameter settings on shaft work, without resorting to measurements other than those given by the dial on the cross feed screw. Furthermore, these measurements can be made repetitive through use of clips on the dial.

At the same time measurement control of operations from the turret is effected by adjustable stops of "gage block" accuracy which are built into the bed of the machine. Conditions similar to this prevail on modern engine lathes, milling machines, boring machines, etc. They have become so common, in fact, that they are taken for granted and the workmen of the younger generation are lost without them.

To give a bit of an overall impression of what has been going on lately in the field of gaging as applied in connection with machine tool use, I have selected the illustrations which appear herewith. As an example of how precision gaging has

(*Please turn to Page* 72)

Fig. 4—Surface quality, as well as dimensions, is now subject to careful gaging. Illustration shows the testing for smoothness of superfinished crank pins of Chrysler crankshaft, by means of an electrically operated profilometer



Corronized boiler 14 inches in diameter, gas-welded with a pure nickel rod, showed no corrosion failure after 300 hours in salt spray. Photo courtesy Rheem Mfg. Co., Newark, N. J.

New

Offers Unusual

Several well-known processes are combined to produce a new type of metallic coating which already has exhibited remarkable corrosion resisting properties in such severe applications as on oil well sucker rods in wells pumping highly corrosive hydrogen sulphide and salt solutions

■ DEVELOPED by Standard Steel Spring Co., Coraopolis, Pa., a new metallic pore-free coating called Corronite appears to offer important advantages in improved corrosion resistance.

Extraordinarily thin coatings produced by the Corronizing process have been found to give extremely effective protection against corrosion of the most severe type. The bond of the Corronite to the steel is so firm and the ductility of the coating so high that bending or forming does not impair the protective value of the coating.

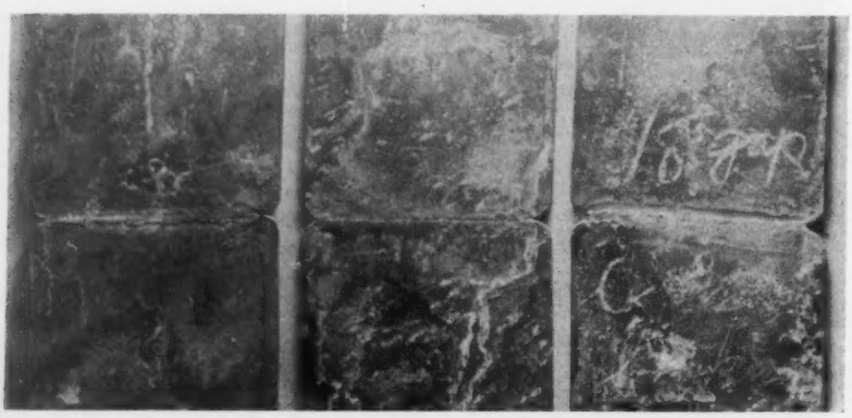
In this new process, the metals making up the coating can be applied in many ways. The composition of the coating, too, can be controlled so closely that coatings varying in thickness and properties can be provided to fit the service conditions to be encountered. Corronite coatings having a thickness of only 0.0004-inch showed exceptionally high corrosion resistance in accelerated tests. Cost of producing the coating is comparable with that of conventional coatings.

This new coating appears to have widespread application in many fields. As a metallic protection to ordinary low-carbon steels, it permits their use in all types of fabrications exposed to weather as well as to corrosive action of acid vapors and various solutions. As a low-cost, highly protective coating, the material is expected to find wide application by railroads, fabricators, shipbuilders, automobile manufacturers and in other industries where corrosion problems are encountered. The coating may be designed to give exactly the protection required in each case.

Development of the Corronizing process and the Corronite coating it produces resulted from search for a method of protecting oil well sucker rods from the exceptionally severe corrosion of hydrogen sulphide and salt water present in some oil wells. After much research work, the Corronite coating was developed. On these highly corrosive "sour" well applications, it has extended equipment life far beyond that previously available. Life of ordinary sucker rods has been prolonged from five to ten times by use of the Corronite coating.

In standard salt spray tests, Corronized sucker rods have withstood 10,000 hours without showing any sign of failure.

Already the new coating has been applied to many products. In manufacture of steel containers, Corronized sheets have been subjected to deep-drawing operations without reducing the protective properties of the coating. Corronized steel sheets



Steel plates coated with Corronite and welded together, then subjected to salt spray test for 500 hours showed no signs of corrosion at or near the weld. Plates in sample at left were butted together and welded with No. 131 Inco nickel electrodes. Middle, also butted together, were arc welded with No. 135 Inco nickel electrodes. Pair at right had a 1/8-inch gap left between them, subsequently filed with metal

Coating

al Corrosion Resistance

This Corronized plate easily withstood 300 hours in a standard accelerated test solution consisting of 1 liter of water, 53 grams salt, 9 cubic centimeters of hydrogen peroxide. Entire solution was renewed every 24 hours for continued peak corrosive action

drawn into half barrels and given standard salt spray tests showed no tendency to corrode after 1500 hours on test.

Another important advantage of the new coating is that objects may be welded without reducing the corrosion-resistant properties of the coating. For instance, the half barrels mentioned above when welded and subjected to salt spray tests revealed no corrosion at the weld or in the zone near the weld, even after prolonged tests.

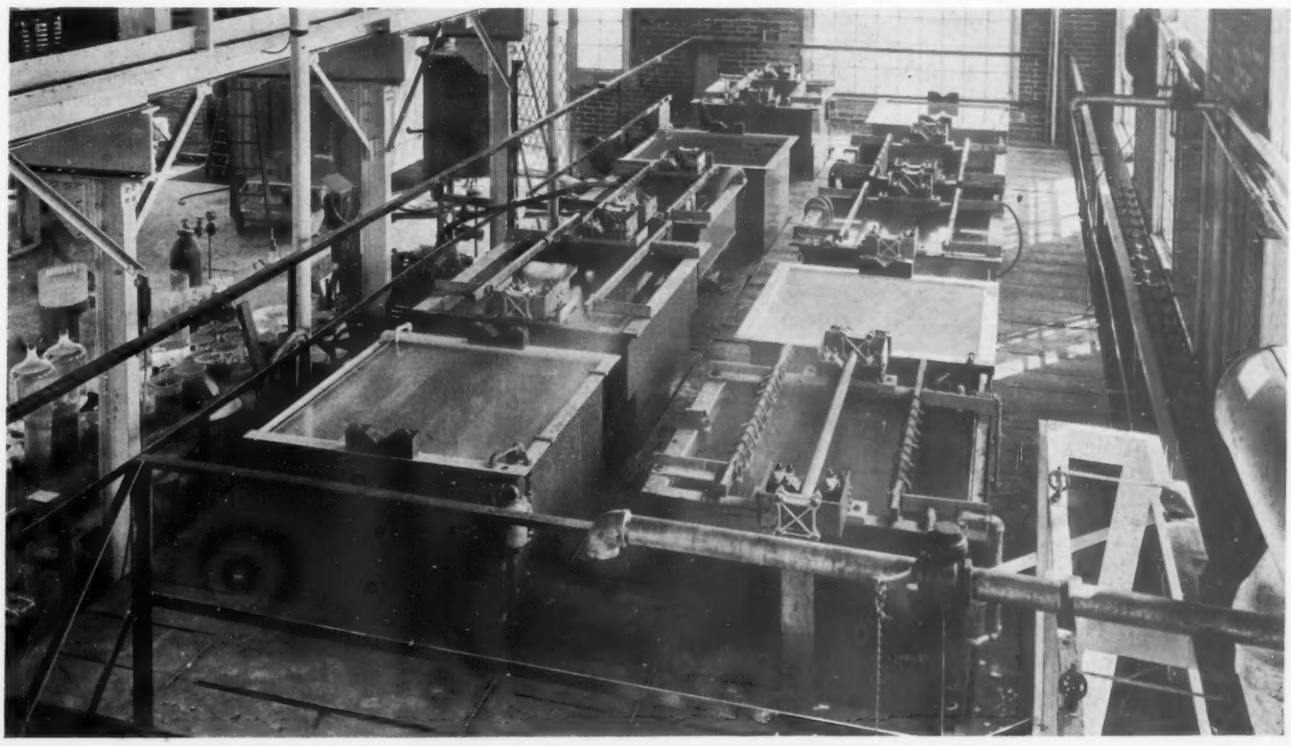
Youngstown Sheet & Tube Co., Youngstown, O., has conducted experiments in production of butt-welded tubing from Corronized material. Skelp with the coating on one side was welded exactly as regular uncoated skelp. Micrographs of the welds produced showed the coating intact over the weld. By this method it thus becomes possible to produce tubing with the corrosion proof coating either on the inside, or outside, or on both sides.

A factor that is holding back the expansion of sheet steel in many new applications, as well as enlarging many present ones, is the corrosion factor. If the new coating proves actually as effective as it now appears to be, there no doubt will be a rapidly expanding market for low-carbon steel since the added protection will permit use where corrosion heretofore prevented it.

It has been estimated by Sir Robert Hadfield, the eminent British metallurgist, that 67,000,000 tons of iron and steel—or roughly $3,000,000,000—was the toll exacted yearly by rust and corrosion. The annual cost of corrosion in the United States alone has been estimated by Dr. F. N. Speller to be almost $1,000,000,000, considering all factors.

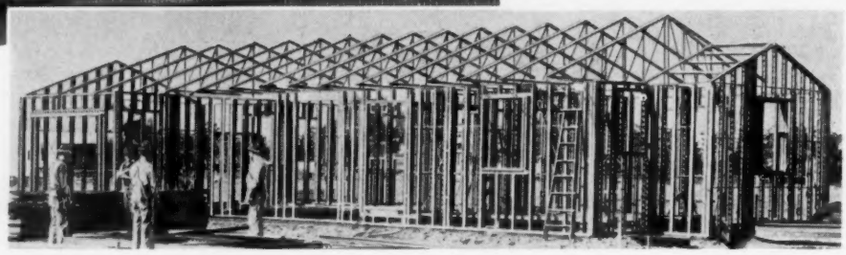
Already the results of applications and tests have aroused so much interest that Corronizing process licenses have been granted to Youngstown Sheet & Tube, Youngstown, O.; Carnegie-Illinois Steel Corp., Carnegie-Illinois building, Pittsburgh; Republic Steel Corp., Republic building, Cleveland; and Sears, Roebuck & Co., 925 South Homan avenue, Chicago. It is understood the process can be applied by any well equipped electroplating department. Also, it is reported that the licensing agreements are most liberal.

View of plating and cleaning tanks in the research laboratory of Standard Steel Spring Co., Coraopolis, Pa.



Model House at Golden Gate Fair

FEATURES Use of STEEL



A steel frame, steel casement doors and windows, and steel for important equipment and furnishings, feature this five-room model house at the Golden Gate exposition. The prefabricated steel framing was hauled to the site in sections and erected by four men in one working day. Frame is anchored to bolts in the concrete foundation with sections arc welded into one unit

■ STEEL in the Modern Home—in materials, equipment, furnishings and appliances—is the theme of the Soule' Uni-bilt steel frame house at the Golden Gate International exposition on Treasure Island, San Francisco. Built by the Soule' Steel Co., San Francisco, the house has been attracting considerable attention. From the exterior, it suggests many another California bungalow, but from the frame to several unusual stainless steel accessories, it emphasizes steel as a modern, durable and safe building material.

Entire Frame Is Steel

The house is an accepted design—California Ranch House—executed by Architect John Knox Ballentine Jr., and demonstrates the adaptability of the Soule' company's prefabricated steel framing to any style of contemporary architecture. It contains five rooms with built-in garage, and in total cost is within the $5000 to $6000 class. In its construction, regular plaster is used over metal lath interior, and stucco is applied over the usual woven wire netting and heavy waterproof building paper for exterior finish. The entire frame is steel—joists, studs, roof framing, windows and subframes.

One of the construction features of the model house is that the steel framing was erected by four men in an elapsed time of 8 hours. The house was completed and ready for public inspection in 18 working days.

Appropriate furnishings by W. & J. Sloane, San Francisco, establish a home-like atmosphere and much steel is in evidence. The general effect is highly pleasing and without undue emphasis on steel. The inventory of materials, equipment, appliances and other products—some common, some unique—made from steel is impressive.

A partial list includes: Framing—floor joists, wall studs and roof framing; casement doors, windows and subframes; lath and stucco netting; sink and drainboards of stainless steel; enameled kitchen cabinets; built-in ironing board; kitchen utility tables; mixing bowls of stainless; fireplace architrave frame of stainless; flexible venetian blinds for kitchen and bath; telephone niche of stainless; bathroom cabinet; shoe racks in closets; gutters, rainspouts, etc.; pipe and conduits; air conditioning units; curbs on garden walks; and chain-link fence in rear garden.

Una-bilt steel framing is suitable for houses, schools, small commercial buildings, apartment houses, and the like. This type of construction for two new wings to a dormitory at Stanford university, Palo Alto, Calif., was described in STEEL, issue of May 2, 1938, page 57. Prefabricated in arc welded sections at the plant, the framing is hauled to the job site, assembled and arc welded into one complete unit. Anchor bolts set in poured concrete provide attachment of the steel framing to the foundation. The finished frame is a sound, strong, rigid unit and of about the same dead load as wood.

Prefabrication is under controlled factory methods with all materials meeting the rigid requirements of the standard specifications of the American Institute of Steel Construction. The framing is adaptable to any architectural style or design and it can be used on connection with all standard exterior and interior materials and finishes.

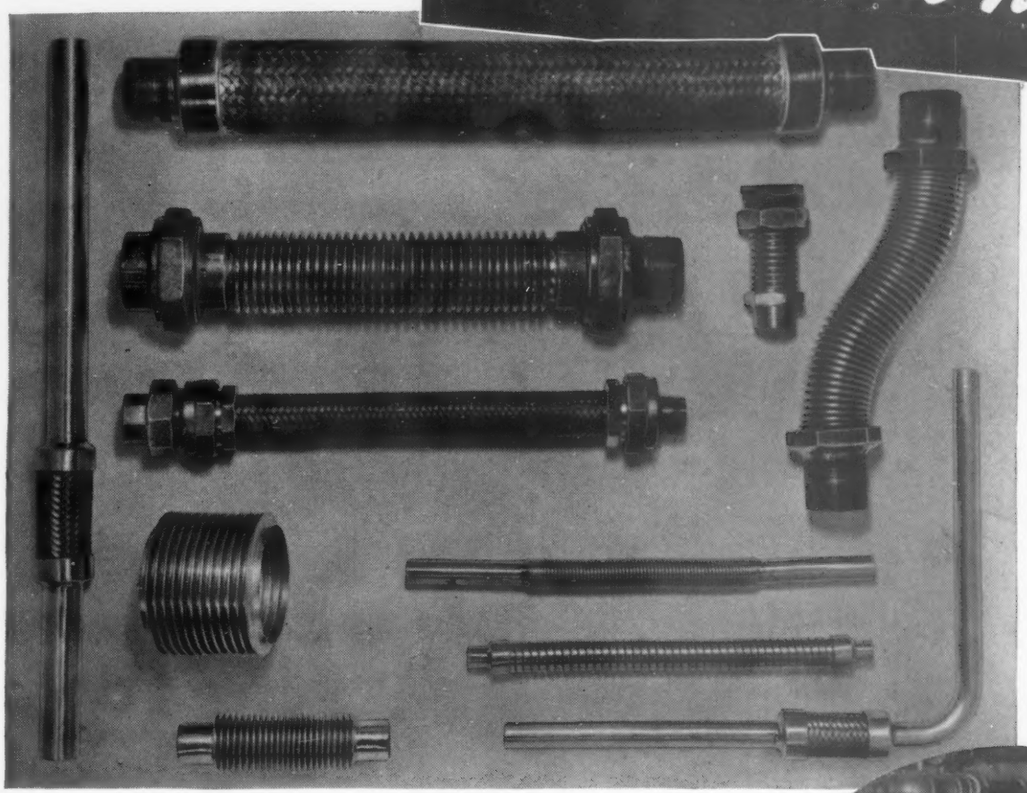
Studs on Variable Centers

Studs are spaced at variable centers depending upon requirements of the job and applied materials used. Design of the stud is an exclusive, patented development. Engineering principles embodied in its design give it maximum strength and rigidity for the weight of material used. The studs are furnished in standard depths of 4 inches and 6 inches for exterior and interior load-bearing wall. For interior nonbearing walls, standard sizes are available in suitable depths.

Trusses are arc welded from steel angles and are adaptable for all types of roof designs. They can

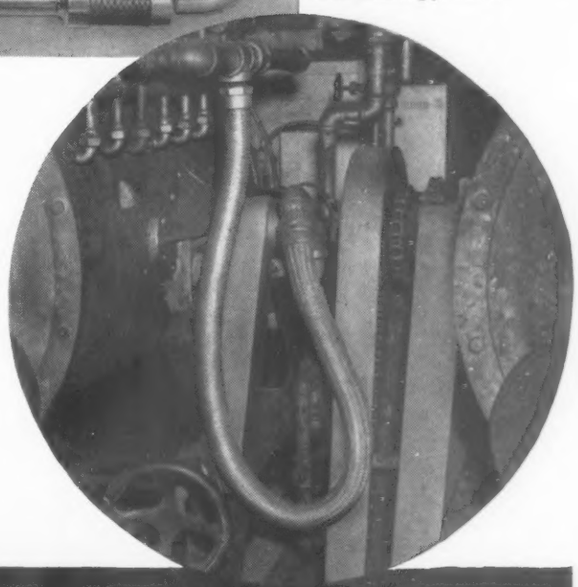
It's the toughest Tubing you can buy

American Seamless Flexible Metal Tubing



LEFT: *A few examples of special flexible tubing assemblies with fittings that we have designed for specific engineering requirements.*

BELOW: *Here's a 6-ft. length of 2" I. D. American Seamless Flexible Bronze Tubing conveying manufactured gas to a heat treating furnace.*



Because it's all metal, *it combines strength and flexibility with safety and long life in service*

American *Seamless* Flexible Metal Tubing is successfully used today in thousands of industrial plants for connecting misaligned or moving parts... for absorbing vibration... for the dependable conveyance under pressure of air, steam, oil, water and gases. American *Seamless* is *all metal*—with no joints, welds, laps, seams, or packing of any kind. It's the toughest tubing you can buy. Available in several metals for various working conditions.

Write us about your connector problems. Our engineering department has complete information on the use of American *Seamless* on all types of equipment. And ask for free reference handbook, *Catalog SS-25.*

89246

American Metal Hose

ANACONDA
from mine to consumer

AMERICAN METAL HOSE BRANCH of THE AMERICAN BRASS COMPANY

General Offices: Waterbury, Conn. • Subsidiary of Anaconda Copper Mining Company

In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

be used with any type of sheathing and roofing material. Roof load is predetermined accurately and the trusses designed for each building. Horizontal and diagonal bracing is provided to give rigidity to the completed structure.

Steel floor joists give an adequate system of floor construction for all types of light occupancy buildings, providing a supporting structure economical to erect and rigid when completed. They are specially-designed for each structure in either solid or open web. The open web type joists are arc welded, length of welds at joints being determined by the stress occurring in each member. Web members are made from hot rolled steel sections to assure the greatest amount of rigidity with the most economical amount of material. Adequate bearing plate provide proper bearing and make the joists stable during erection.

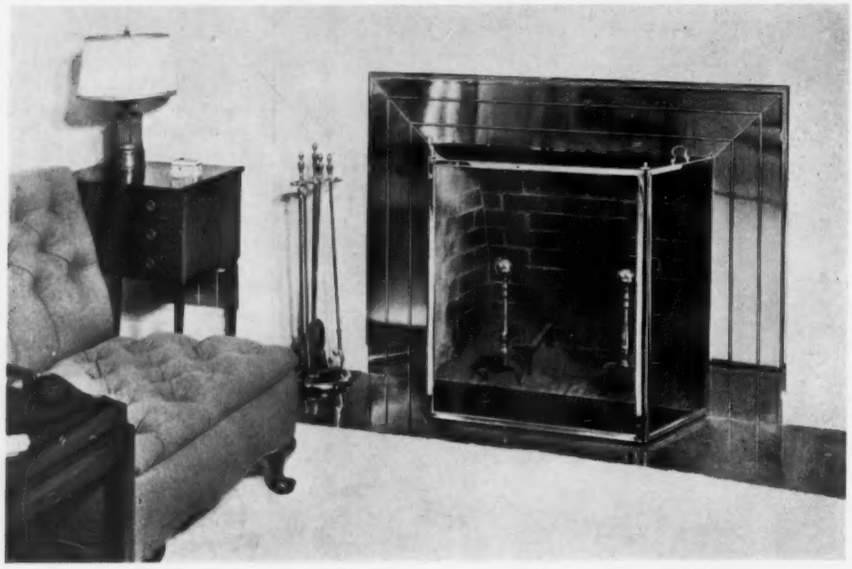
Steel windows and steel subframes, which meet architectural requirements of strength, beauty and adaptability, are installed into the steel framing.

Frame Easily and Quickly Erected

An important advantage claimed for prefabricated steel framing is its quick and easy erection, one or two days only being required for the average house, with a corresponding saving in time for larger structures.

Reliable tests are said to indicate that this type of construction is highly resistant to earthquake shock. It is also protection against collapse in heavy wind storms. Furthermore, it is fire resistant; provides freedom from sagging, settling and plaster cracking; and gives immunity to termites and dry rot.

Promotion of steel framing for residences is not new, but in perfecting its design and in adopting methods of merchandising the company has sought to profit from experience of predecessors in the field. The public is slow to change its standards, believes Edward L. Soule', president, Soule' Steel Co., and any building method—no matter how good—which alters architectural design radically or is too complicated in detail to be grasped readily, cannot be profitable to its pioneers. For this reason, his company's steel frame, in use, parallels wood framing sufficiently to offer comparison. Its adaptability to contemporary styles is likewise felt to be most important.



Architrave frame around the fireplace (left) is stainless steel. The streamlined pullman-type kitchen follows the modern fashion. Shown below are the stainless steel sink drainboards, enameled steel cabinets and flexible steel venetian blind

Carrier WRAPS UP... "Packaged Comfort"

WITH YOUNGSTOWN SHEETS

From 1932 to 1939 Carrier has been refining the design of their Room Air Conditioners until now the new model occupies but one-third the space of the former. A creditable job in which Youngstown Sheets played an important part.

Casing sheets were one of the many troublesome problems. Tough to solve because the sheets had to take a simulated wood grain enamel finish on the outside and the inside of the same sheet had to stand guard against the ravages of weather--heat, moisture, dust and corrosion -- yet with all this internal abuse the sheets had to stay flat to maintain the appearance of the cabinet.

Youngstown Sheets are filling this order day after day, largely because of a combination of modern machinery, modern methods and human skill that makes production to difficult specifications a regular habit.

You, too, can start cost-cutting today, produce finer work with less wastage, if you will write now to --

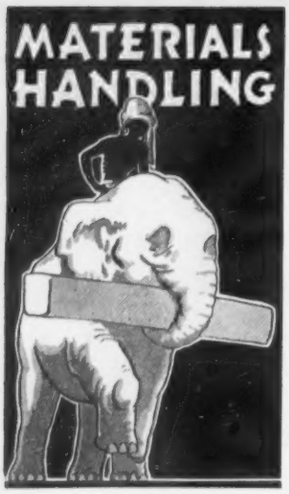
STEEL TRADE MARK YOUNGSTOWN SHEETS

Sheets - Plates - Pipe and Tubular Products - Conduit - Tin Plate - Bars - Rods - Wire - Nails - Tie Plates and Spikes. 11-4B

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - YOUNGSTOWN, OHIO



A Brass Foundry

Revised layout of equipment reduces handling to a minimum, permits better housekeeping and provides a healthful, safe place in which to work. Also capacity is more than doubled in same floor area

By L. W. BAILEY
General Electric Co.
Philadelphia

■ FOUNDRY operations involve the movement of three major classes of material: Sand, flasks and metal. The modern trend of materials handling in foundry operations is to conveyorize, allowing molders to utilize practically 100 per cent of their time for actual molding and eliminating much extra effort formerly involved in handling sand and flasks.

Not long ago the layout of the Philadelphia brass foundry of General Electric Co. was changed to meet the requirements of space, increased production, cost reduction and safety. This change has proved extremely satisfactory and has made it possible to obtain the greatly needed increase in production without undue increase in cost.

Since the handling of the three classes of materials is quite different, each will be considered in its turn.

SAND

Hopper-cured sand is directly over the molder's flask at all times and is obtained readily in proper amounts by operation of a hopper valve. Most of the molding is done on molding machines which eliminate fatigue and excessive effort associated with hand tamping. A general view of the sand hoppers, molders' benches and return conveyor is shown in Fig. 1. This photograph was taken from above the shakeout. Fig. 2 shows the same equipment from the top, with the chutes of the sand hoppers, the sand-return belt and the plows in sight.

As the molds are completed, they go to the pouring-line conveyor, Fig.

Fig. 1—Sand hoppers feeding molders' benches at left and extreme right

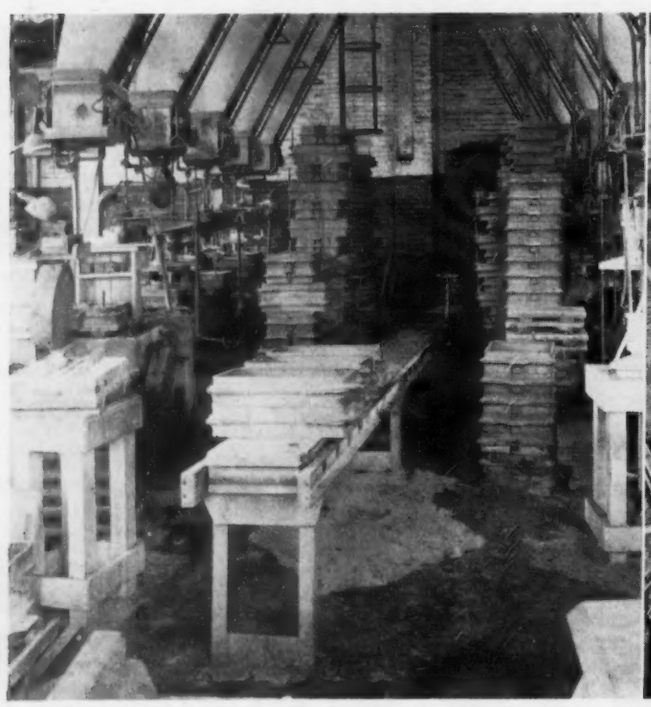
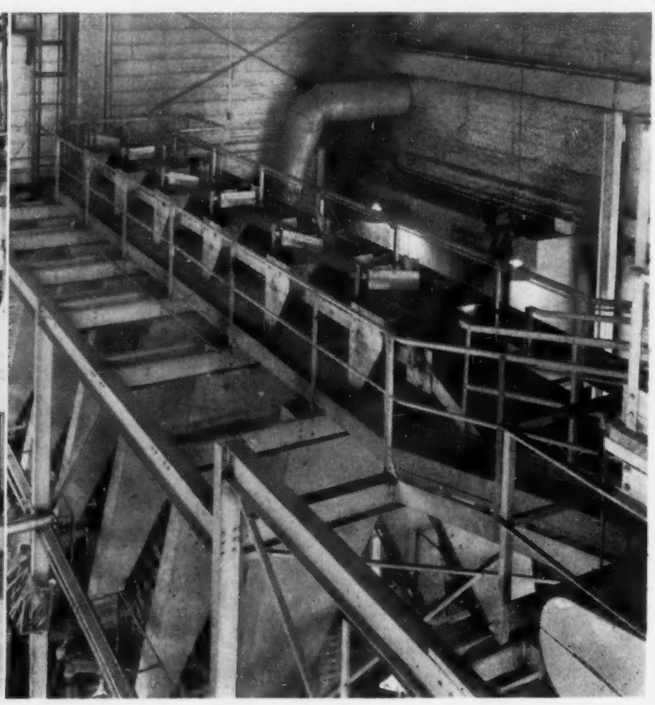


Fig. 2—Overhead view of sand hoppers, delivery spouts of which are shown in Fig. 1



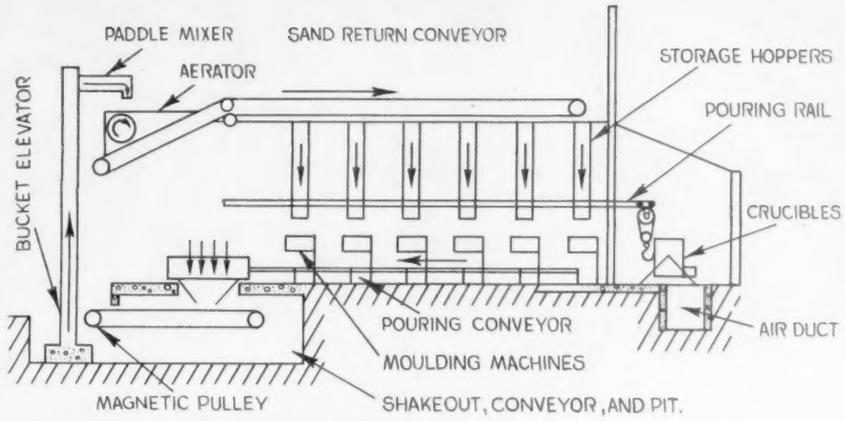


Fig. 3—Sand handling scheme. Arrows show path of sand through various operations

Fig. 4—Molds in storage conveyors awaiting shakeout

5, from which they are transferred to a storage conveyor, Fig. 4, while awaiting shakeout. The shakeout is of the vibrating screen type, Fig. 6, and is exhausted from above by a fan rated at 20,000 cubic feet per minute.

The sand drops through the screen to a magnetic separator which removes all magnetic material—such as nails—into a separate container. The clean sand then is raised to a paddle mixer by a bucket elevator and the necessary water is added. From the paddle mixer, it drops into an aerator from which it is thrown to a belt. As the belt carries it along, plows deposit the sand in hoppers where it is stored until used again.

FLASKS

The flasks and boards are sent back from the shakeout on a roller conveyor. From this conveyor, they are stacked in a position readily accessible to the molders. The molder shifts a flask to his bench, makes his mold and deposits it on a board which rests on a roller conveyor running perpendicular to the pouring line, Fig. 5. As enough molds are made to warrant a pour, they are transferred to the pouring line. After being used there, they are conveyed on to the shakeout.

CASTINGS

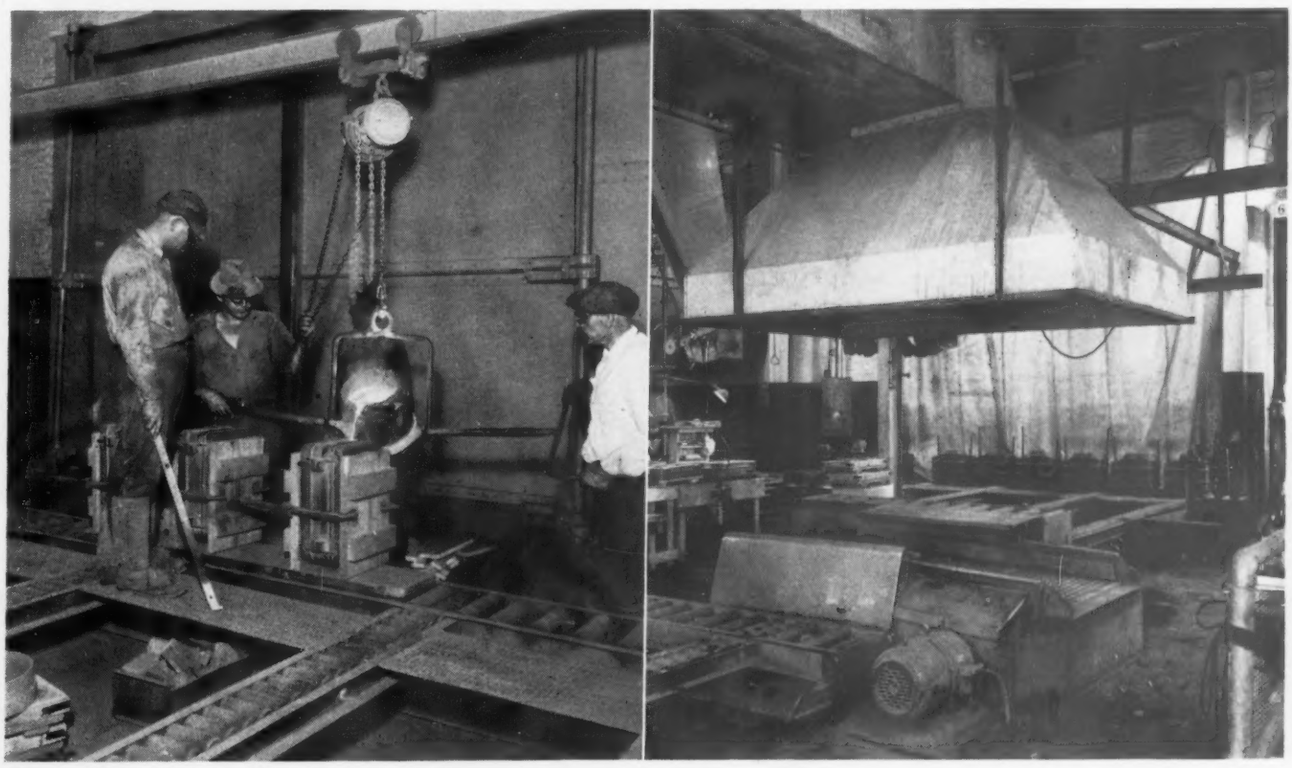
The pouring ladle, Fig. 5, runs on a rail above the pouring lines from the melting room. This aids in safer, faster pouring and promotes greater uniformity of castings. The machine shakeout dumps the castings on a truck which is pushed into the sprue cutting and grinding room. Here there is exhaust piping, which is connected to a large dust collector system employed in this shop.

After sprue cutting, grinding and sandblasting, the castings are ready for the sorting bench and soon are on the way to their destination.

(*Please turn to Page 72*)

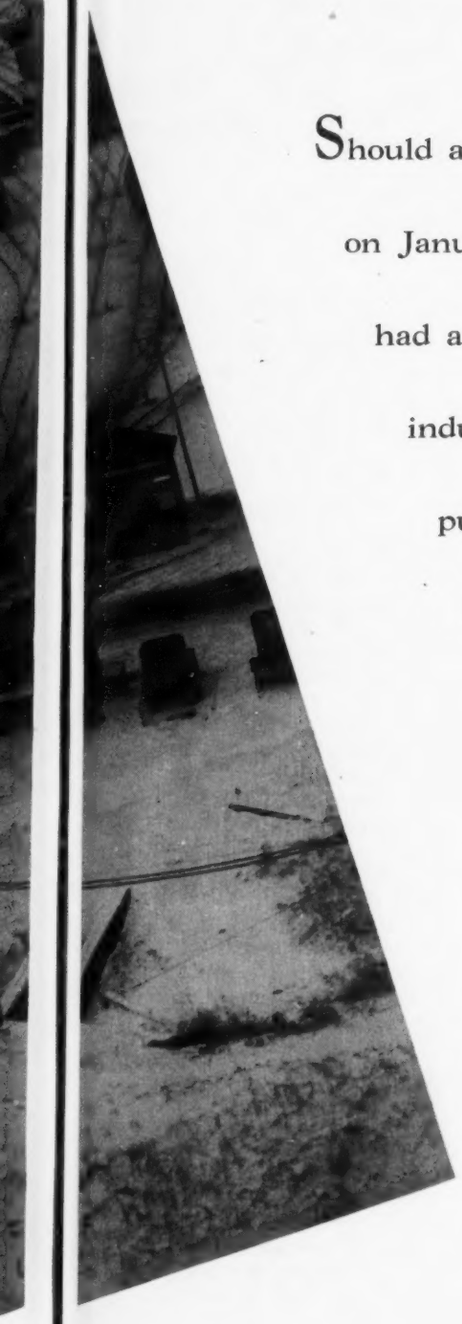
Fig. 5—Pouring line is under ladle rail. Here molds rest on a section of roller conveyor fed by adjoining sections of conveyor from molders' benches

Fig. 6—Shakeout with exhaust which removes 20,000 cubic feet of air per minute



Destined to Blaz

ket the Industry

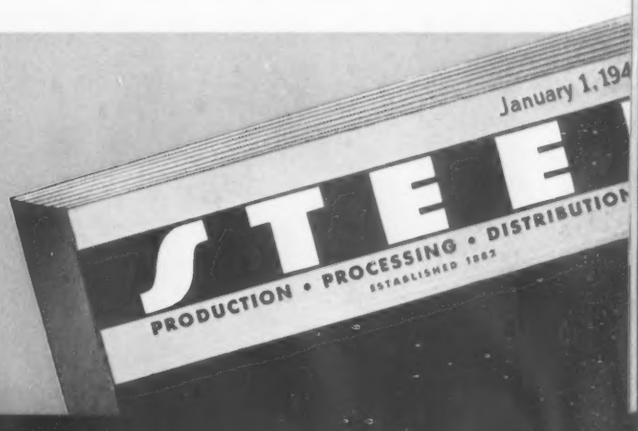


Should a heavy mantle of snow blanket the metalworking industries on January 1, 1940, we swear Dame Nature alone will have had a hand in it . . . but, STEEL's thorough coverage of the industry beginning on the same day will be an act of publishing effort and ingenuity . . . for that day shall herald STEEL's "Yearbook of Industry" issue . . . destined to wend its way into the hands of over 60,000 individuals of varying degrees of authority in the iron, steel and metalworking industries.

Any worthwhile advertising message in this issue is bound to have a receptive audience.

STEEL's

1940 Yearbook Issue



Tin-Coated Electrodes

New method of welding galvanized iron and steel sheets deposits coating of tin on areas near weld where zinc has been vaporized. This protective coating shields base metal, prevents corrosion and helps produce a strong joint

By A. R. ECKBERG
Assistant Superintendent
Engineering and Maintenance Department
Eastman Kodak Co.
Rochester, N. Y.

■ FOR MANY years, Eastman Kodak Co., Rochester, N. Y., has been a large industrial user of air conditioning. Quality control of photographic film and paper necessitates exact temperature and humidity conditions in nearly all manufacturing departments. Hence, many large air ducts, air washers and other conditioning equipment of galvanized iron sheets have been built and installed in this plant.

Conventional method of joining galvanized sheets by riveting and then soldering for an air tight joint does not always provide the strength desired. The flux used for the solder often caused zinc oxide formation in moist atmospheres. Also this procedure was quite expensive in the construction of large sized equipment.

For these reasons, a search was started for an improved method of joining galvanized iron sheets. During this investigation is was found that carbon arc welding with a filler rod of copper-silicon alloy left a margin along the weld line from which the zinc coating was removed by volatilization during heating of the weld. This zone, an unprotected area of bare iron, was extremely

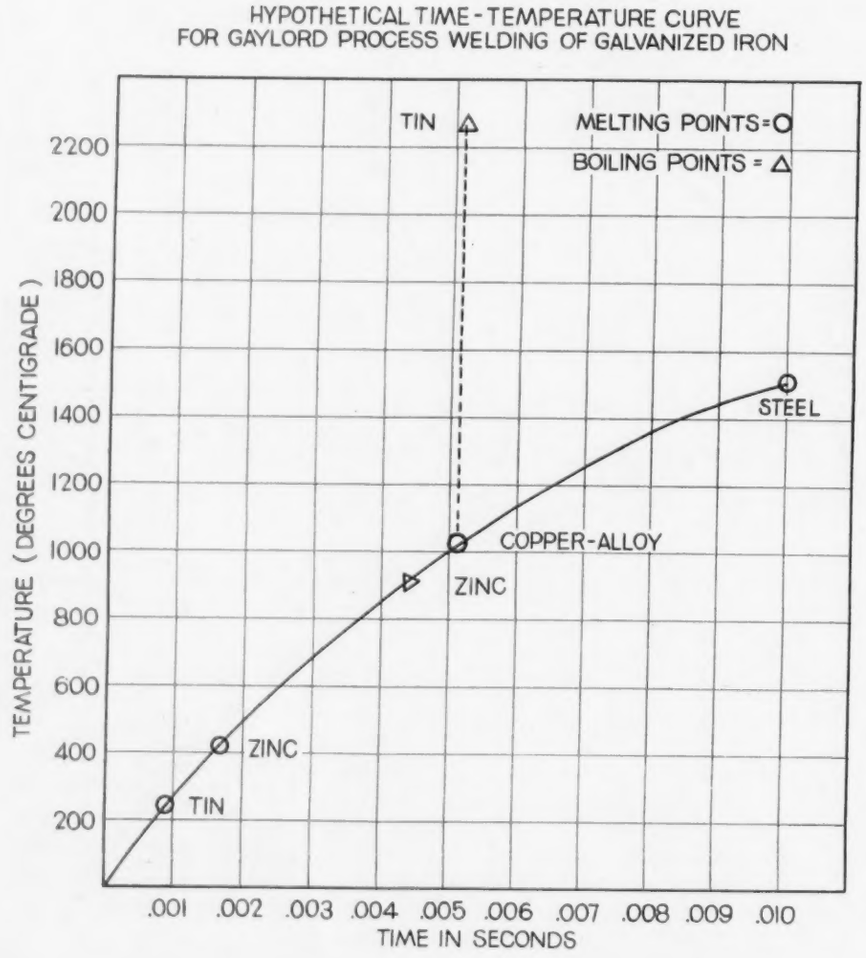


Fig. 1. (Upper) — Hypothetical time-temperature curve for Gaylord process welding of galvanized iron

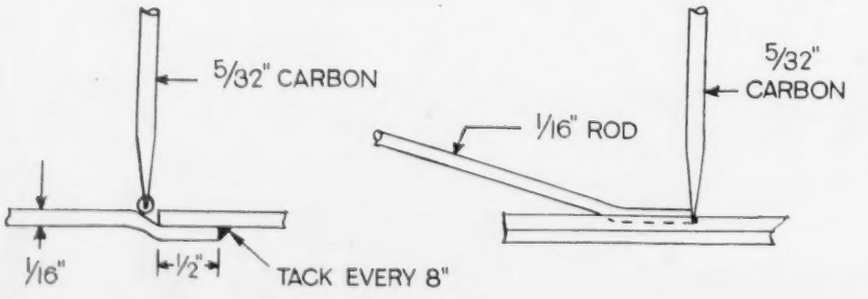


Fig. 2. (Lower)—Specifications for welding of $\frac{1}{16}$-inch material

Fig. 3.—Laboratory equipment of galvanized sheets welded together

susceptible to rust in air-conditioning equipment or air ducts.

Further development resulted in coating the copper alloy rod with block tin. It was found that the block tin deposited itself adjacent to the weld metal, when proper procedure was used, the bare iron was fully covered over with molten tin at the same time the weld was deposited by the carbon arc.

The adequacy of this protection was checked by the "Preece" test method, and it was found that welded joints of this description would withstand a two or three dip test in a copper-sulphate solution.

Welding with the carbon arc and copper-alloy tin-coated welding rod is covered by the Gaylord patent No. 2,170,019, dated August 22, 1939. A detailed explanation of what occurs in this process follows:

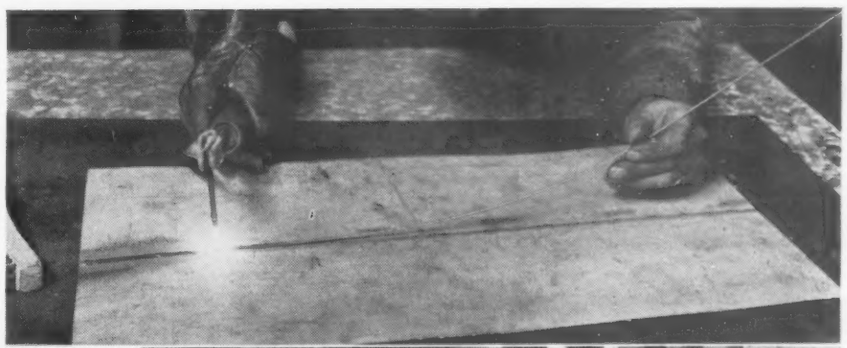
A carbon arc has a temperature of approximately 3200 degrees Cent. In the Gaylord welding procedure, the tip of the carbon is held approximately two-thirds of the way through the copper alloy rod which is laid flat in the fillet of the seam.

The chart, Fig. 1, indicates that the melting point of the tin coating is 231 degrees Cent., while its boiling or volatilization point is 2260 degrees Cent. The melting point of zinc is 419 degrees Cent. with a boiling point of 907 degrees Cent. The melting point of the copper alloy rod (96 per cent copper, 2½ per cent siiicon, 1½ per cent manganese) is 1020 degrees Cent.

As the heat of the carbon arc is applied, the tin goes into a liquid form at 231 degrees Cent.; the zinc passes into a liquid form at 419 degrees Cent., but volatilizes at 907 degrees Cent. which is 113 degrees Cent. below the melting point of the copper alloy rod. This then is the reason that the zinc coating is driven off adjacent to the welded seam.

The tin coating, however, does not volatilize at all, but remains in a liquid form since the copper alloy rod melts at 1020 degrees Cent., or 1240 degrees Cent. below the boiling point of tin. The carbon

(*Please turn to Page* 74)



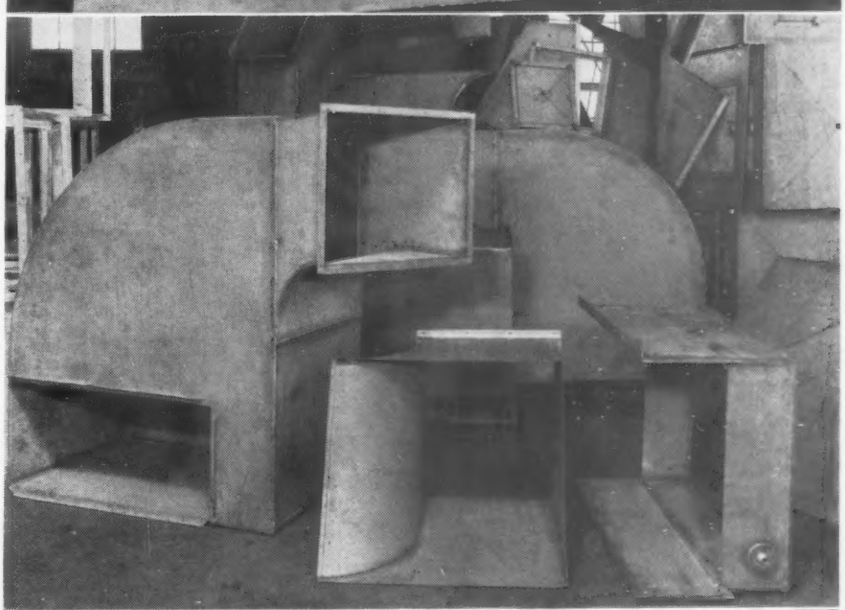
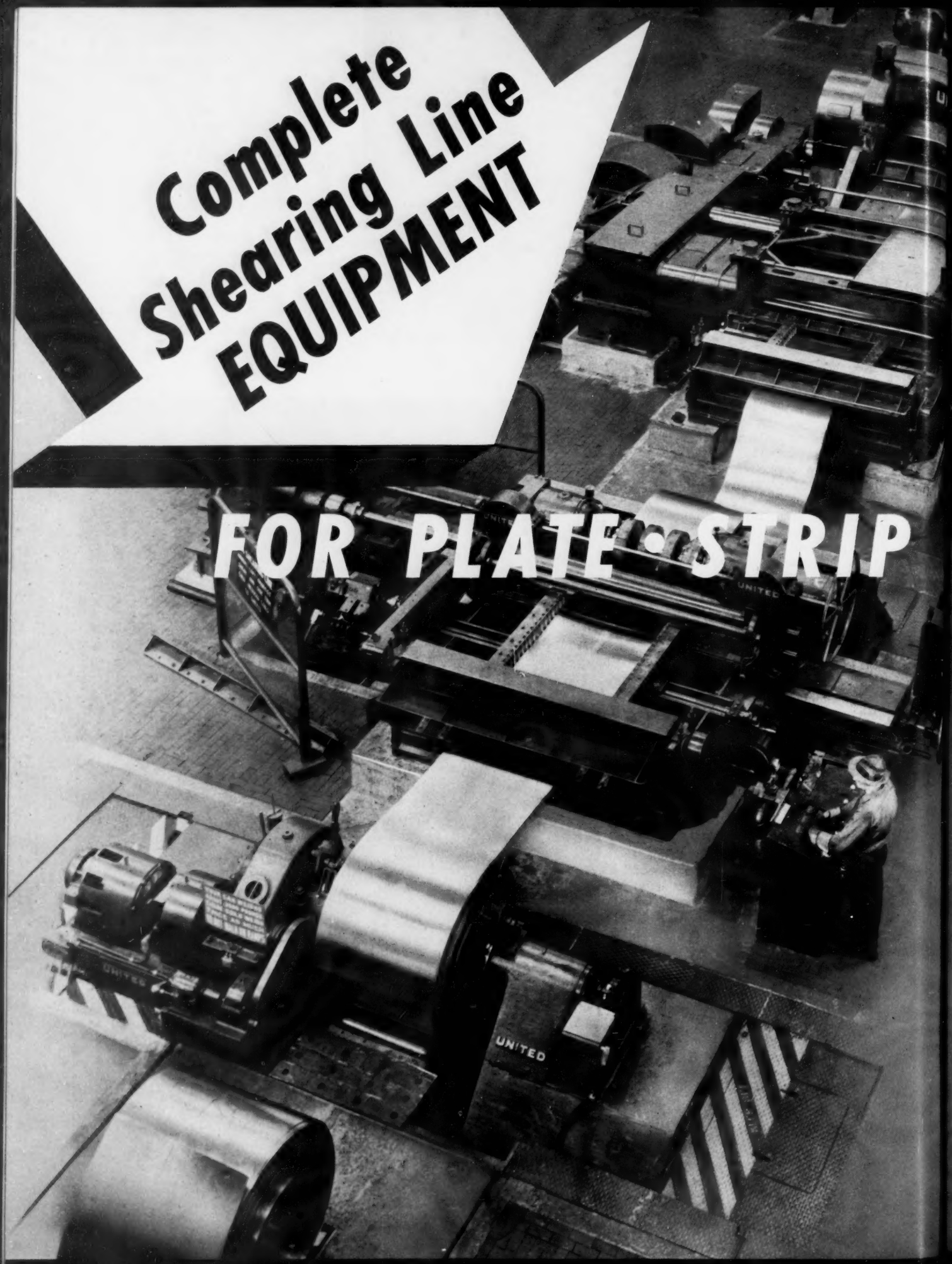
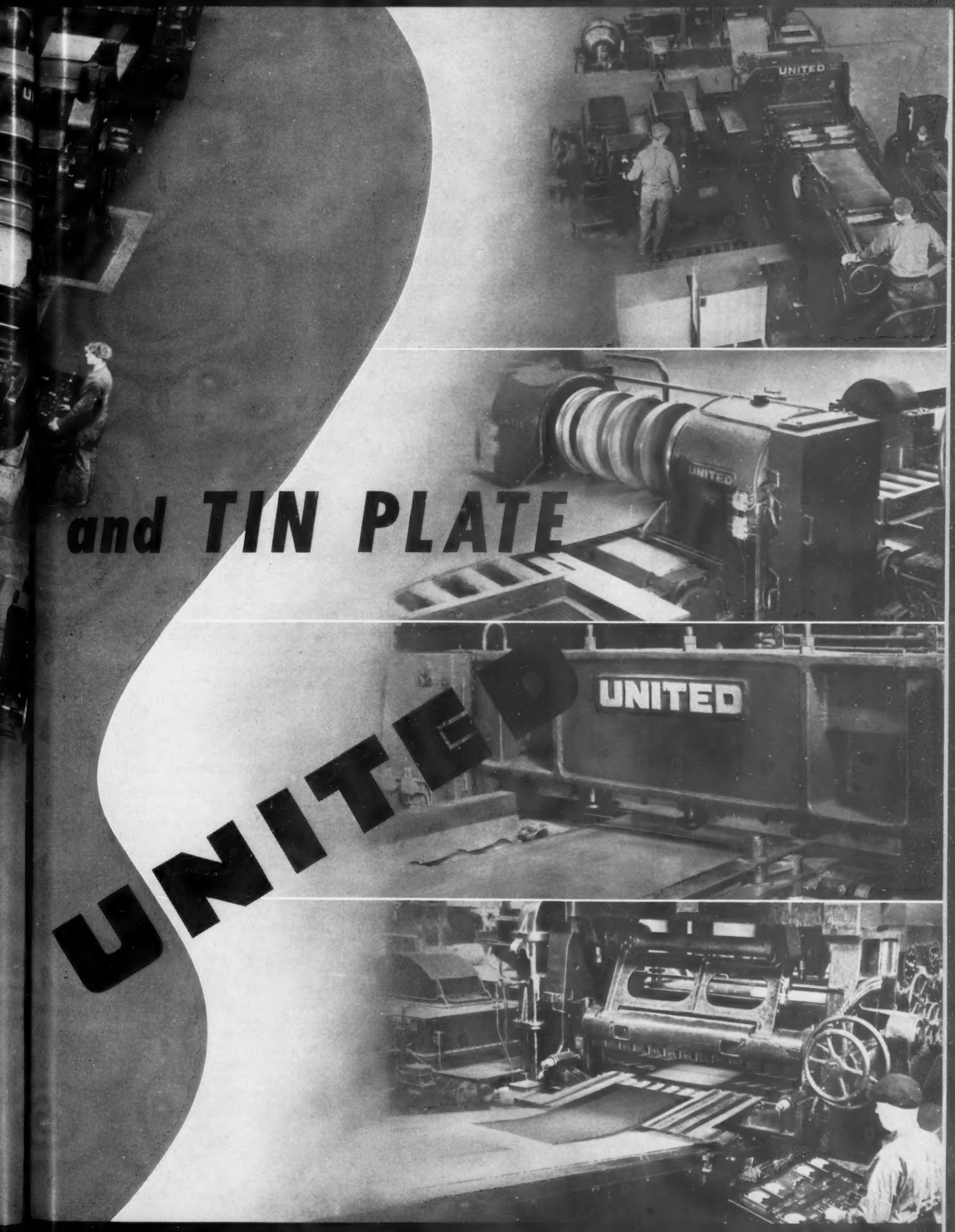


Fig. 4. (Top)—Depositing weld metal in fillet of jog-lap joint. Fig. 5. (Center)—Air-duct connections welded from 18-gage galvanized sheet. Fig. 6. (Bottom)—This interchanger weighing 8 tons is constructed entirely of galvanized sheets and plates welded by the Gaylord process

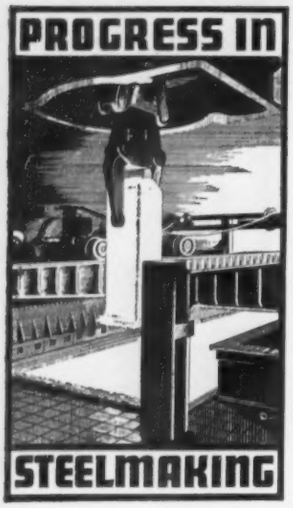


UNITED ENGINEERING *and* FOUNDRY COMPANY

Pittsburgh · Pennsylvania



DAVY AND UNITED ENGINEERING COMPANY, LTD., SHEFFIELD, ENGLAND · DOMINION ENGINEERING WORKS, LTD., MONTREAL, P. Q. · UNITED INTERNATIONAL, S. A. PARIS, FRANCE · SHIBAURA-UNITED ENGINEERING CO., TOKYO, JAPAN



New Continuous Strip Mill

First part of this article, presented last week, described new hot mill and pickling equipment. Second part here details new cold mill, annealing department and other auxiliaries for handling the greatly increased output

Part II

By E. F. ROSS
Engineering Editor, STEEL

■ EXISTING cold mill equipment for production for strip for tinning consists of two independent, single-stand, 4-high, 16 and 49 x 42-inch reversing mills. Main motor for No. 1 is 2000 horsepower, 600 volts, direct current, 230 to 460 revolutions per minute; for No. 2 is 1750 horsepower, 600 volts, direct current, 400 to 1600 revolutions per minute.

This capacity has been augmented by installation of a new 5-stand tandem, 18 and 49 x 48-inch mill equipped with tension reel and belt wrapper. This mill has a finishing speed of 2000 feet per minute, and in connected horsepower, speed and rated capacity, is said to exceed any of the mills for the purpose now in operation. Lubrication is provided by automatic grease and oil systems.

Direct Current on All Stands

All five stands are driven by 600-volt, direct-current motors. No. 1 is 1500 horsepower, 300 to 600 revolutions per minute; Nos. 2, 3, and 4 are 1750 horsepower, 300 to 600 revolutions per minute; and No. 5 is 1750 horsepower, 175 to 437 revolutions per minute. The tension reel is driven by a 400-horsepower, 600-volt, direct current motor of 300 to 1200 revolutions per minute. The total horsepower of 8900 is said to be the highest for any cold strip mill in the world. Direct current power of 600 volts is supplied by two 2500-kilowatt generators. These are driven by a 9000-horsepower, 11,000-volt, 60 cycle synchronous motor of 514 revolutions per minute. minute.

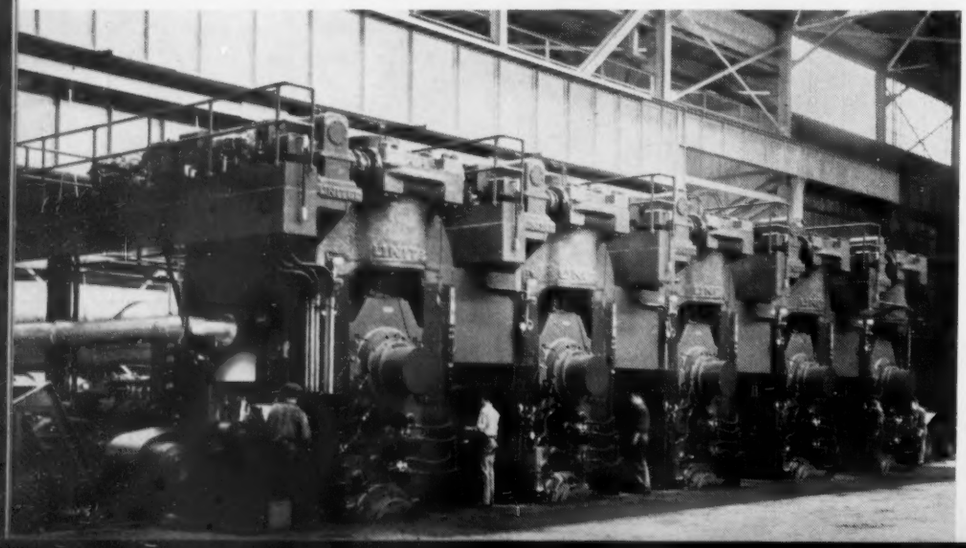
From the cold mills, coiled strip is transported to the continuous electrolytic cleaning lines for removal of all oil and dirt which may have accumulated on the surface during rolling. Three lines are available, one being newly installed. Placed in an uncoiler, a coil has its leading end seam welded to the trailing end of the preceding coil. The strip then moves through a hot washer and wringer rolls and into a single-compartment electrolytic tank with submerged rolls at each end to maintain the strip at the proper pass line. Functioning as the cathode, the strip passes between several sections of large surface anodes. Covered support rolls plus line tension keep the strip at the proper pass line to assure equal cleaning on both sides.

The strip passes next through a scrubber unit, then a hot water rinse and finally through a series of wringer rolls from which it emerges dry. After being looped to eliminate tension, the strip has the weld sheared out and is recoiled for transfer to the annealing department adjacent.

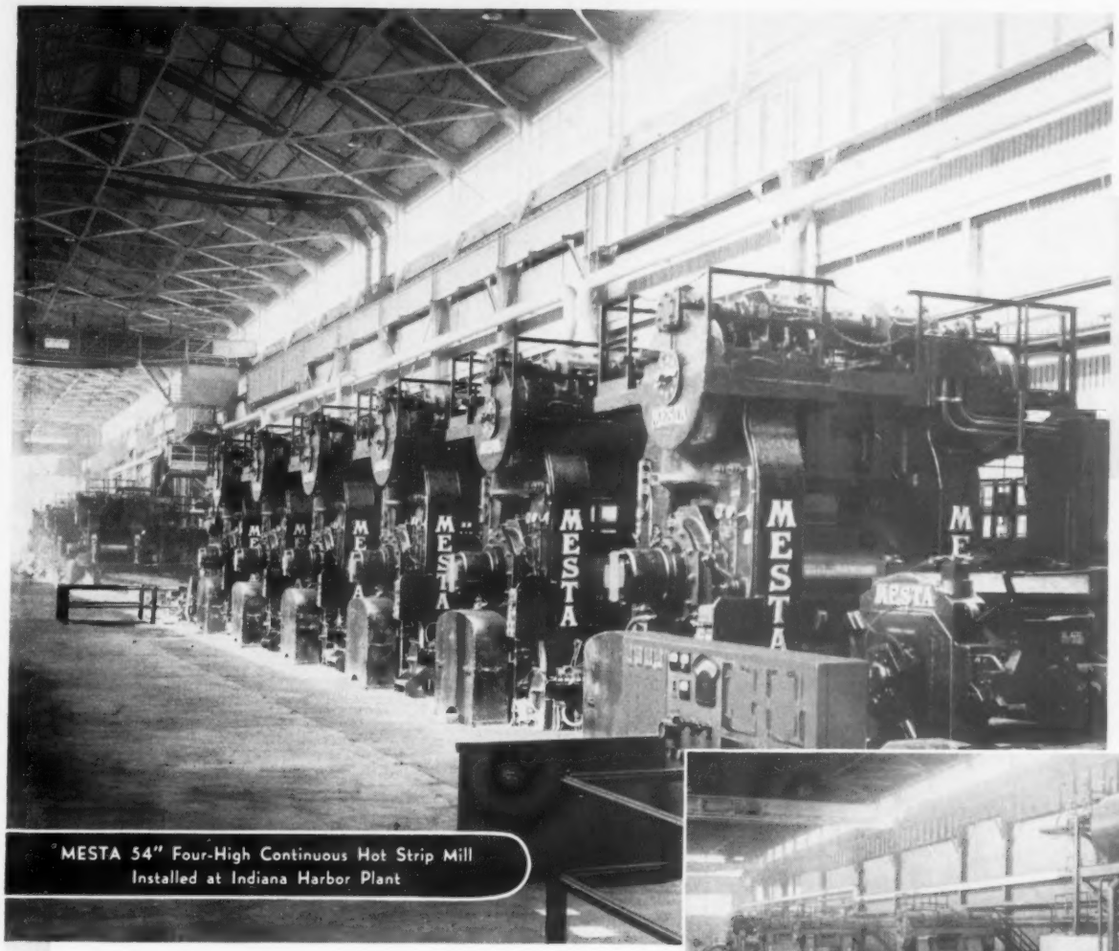
Annealing Department

Equipment in the annealing department consists of one previously installed 4-chamber furnace which will accommodate either coils or flats and one new double-chamber furnace for coils only. The furnaces are gas fired. The coils or flats are placed on bases, covered with hoods and sealed to provide controlled atmosphere annealing.

Following annealing, the coils go to the skin pass mills. One of these, in use for some time, is a single-stand, 4-high, 16 and 49 x 42-inch mill, driven by a 300-horsepower, 250-volt, direct-current motor of 575 to 1150 revolutions per minute. The other, completed last year, is a 2-stand, 4-high tandem, 18 and 49 x 42-inch mill, which is unique in that the driving motors and drag generators are all direct connected,



Working side of cold mill with tension reel at delivery end in left foreground



MESTA 54" Four-High Continuous Hot Strip Mill
Installed at Indiana Harbor Plant

Roughing Stands, 79" Four-High Continuous Hot Strip Mill
Installed at Campbell Works

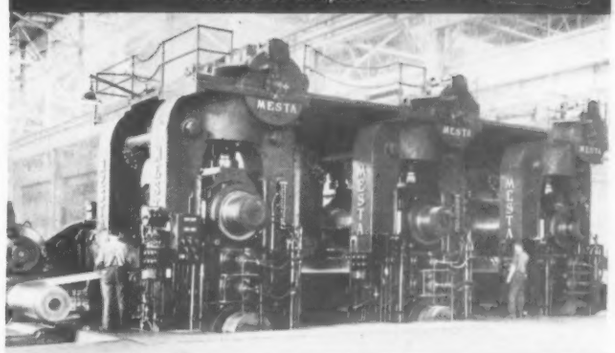
Built by

MESTA

for the

YOUNGSTOWN

SHEET AND TUBE COMPANY



75" Four-High Three Stand Tandem Cold Mill for Rolling Sheet Strip
Installed at Campbell Works

MESTA MACHINE COMPANY
. PITTSBURGH, PA.

no gear reduction units being employed. Each stand is driven by a 350-horsepower, 250-volt, direct-current motor of 215 to 430 revolutions per minute.

Feed reel of this mill is driven by two 25-kilowatt, 125-volt, direct-current motors of 90 to 360 revolutions per minute; the tension device by a 102-kilowatt, 250-volt, direct-current motor of 215 to 430 revolutions per minute. The tension device on the finishing end of the mill is powered by a 350-horsepower, 250-volt, direct-current motor of 215 to 430 revolutions per minute; the reel by a 150-horsepower, 250-volt, direct-current motor of 95 to 380 revolutions per minute. Generator equipment consists of two 500-kilowatt units of 250 volts, direct-current.

Coil Processing Line

After the temper rolling operation, the strip is sent to the coil processing line where it is leveled, sheared, trimmed and cut to lengths ranging from 30 inches to 20 feet. The line handles strip from 20 to 9-gage, 8 to 51 inches wide, at a rate of 300 feet a minute. From this point on, material is handled as it was prior to installation of the new continuous mill. These operations include white pickling, coating with tin, assorting finished tin plate, warehousing and shipping. Incidentally, a new metallurgical laboratory and office building is being provided for the tin mill. This is of brick and steel construction and is of modernistic design.

Strip produced on the new continuous hot mill and not to be coiled and cold rolled passes from the flying shear over the runout table into the hot mill building. The cut lengths of strip pass through pinch rolls and pilers, are weighed, and then transferred to the hot finishing department. Three overhead cranes serve the hot mill runout. The hot mill finishing department is equipped to handle lengths up to 32 feet and is provided with three cranes, one of 25 tons capacity and two of 15 tons.

In this department, the flat sheets are pickled, then passed through a scrubber and dryer. The latter equipment includes special devices for loading and unloading the sheets. After these operations, some of the sheets are leveled, some are leveled and oiled ready for shipment, and others are given a skin pass in a new 2-high, 28 x 54-inch hot strip temper mill, arranged to handle coils as well as flats. In connection with the skin pass mill, a 4-chamber sheet annealer is provided, however, it is not necessary that all sheets sold be annealed. Space is available for future installation of a continuous normalizing furnace. Provisions are made for both rail and truck shipping of sheets from the hot mill finishing department.

Adjacent to the hot mill finishing department is a processing line and to it coiled strip can be delivered from coil storage. This transfer is accomplished by a long conveyor which passes under the hot mill runout building. Coils received on this conveyor can be subjected to a skin pass on the new hot strip temper mill, or can be leveled, trimmed, cut to length, slit, or recoiled. From this point, strip reduced to flats can be sent to the pickler, skin pass, oiler or any other operation chosen.

Mill Handles Larger Slabs

Since the continuous strip mill accommodates slabs considerably larger than could be rolled on its 35-inch, 2-high, reversing blooming mill built in 1916, the Youngstown company replaced the latter with a 2-high, 46 x 96-inch reversing mill having a 58-inch lift. Taking ingots weighing approximately 25,000 pounds, this mill will produce slabs having maximum width of 54 inches and weighing 12,000 pounds. This mill was put on the existing foundation with some slight modifications and is driven by the old motor but through new pinions. The motor, rebuilt in 1929, is of double armature type, 8000 horsepower, 600 volts, direct current, with a speed range of 0-50-120 revolutions per minute. Ward-Leonard control is provided for the screwdowns. The mill has an automatic grease lubrication system.

New auxiliary equipment includes an approach table equipped with turntable and scale. The 1000-ton slab shear was remodeled to make it a start and stop shear. A double slab piler and pusher table extension was installed to pile slabs 20 to 54 inches wide, 3 to 6 inches thick, 15 feet long in one pile, or slabs 5 to 7½ feet long in two piles. An extension was built to the slab yard to facilitate shipment of slabs to the new hot strip mill. A new 50-ton crane serves the slab yard and bloomer.

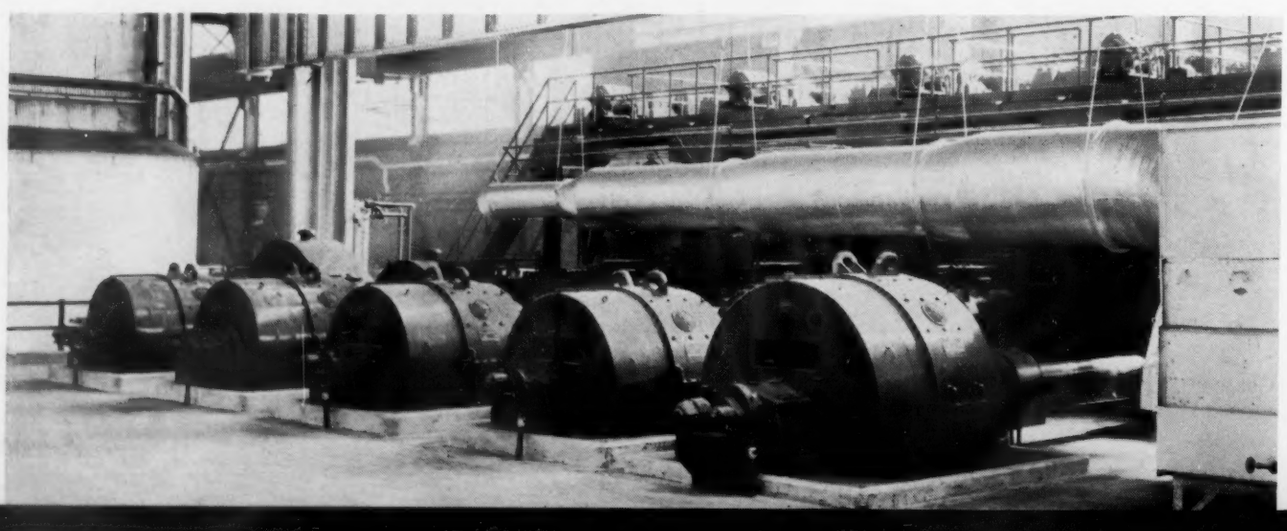
Soaking Pits to Be Englarged

Enlargement of some soaking pits is under consideration. A new ingot buggy was purchased and two of the three 7½-ton soaking pit cranes were remodeled to increase their capacity to 15 tons so they can handle heavier ingots. The soaking pit building was strengthened up and tracks and openings in the building rearranged to permit open-hearth and bessemer heats to be kept separate. Cracks between open-hearth and bessemer and stripper buildings also were rearranged to facilitate handling of ingots to soaking pits.

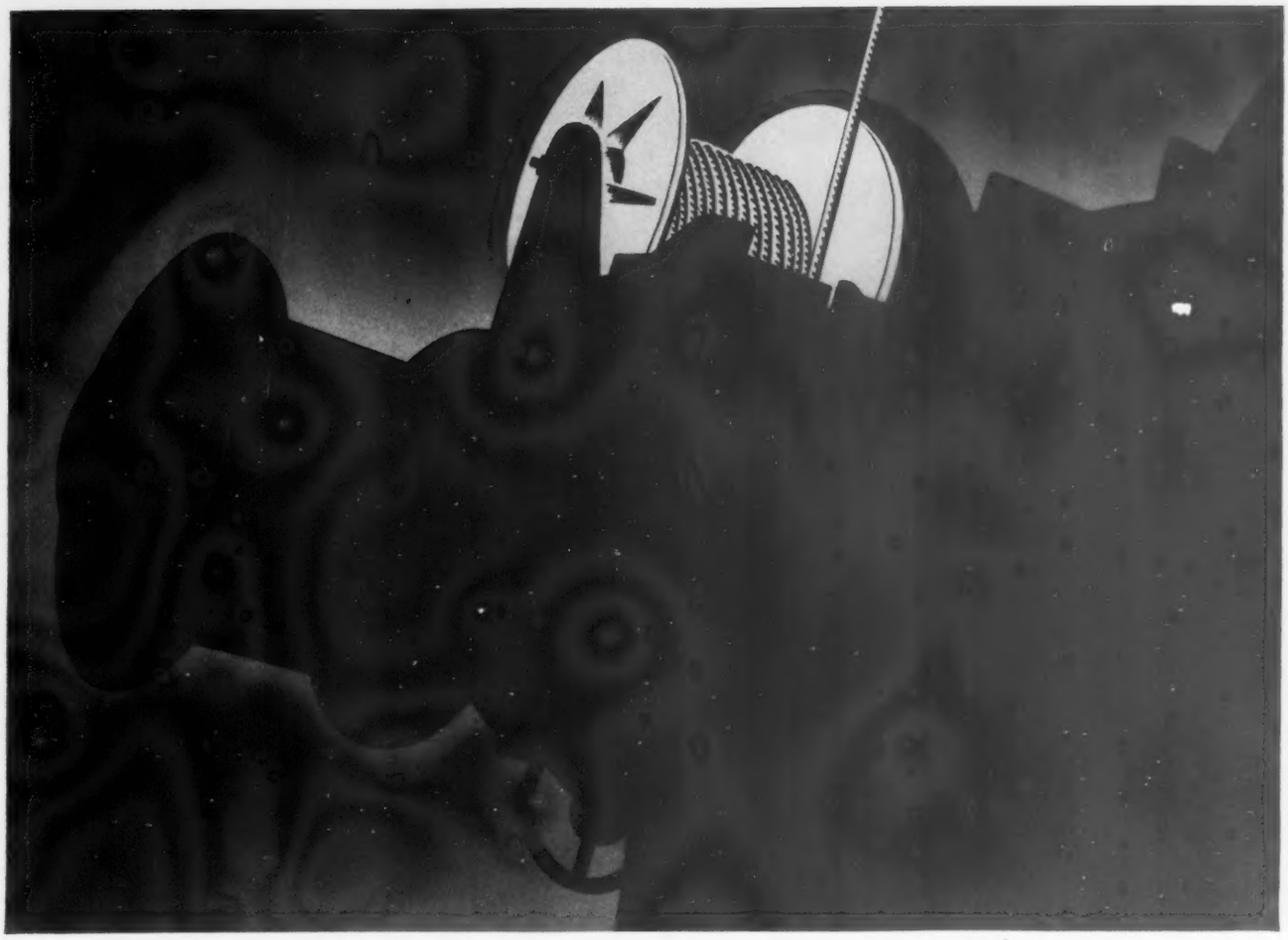
Open-hearth steel capacity in the Indiana Harbor works is being increased to meet the demands of the new continuous strip mill. The present plant has seven open hearths of which Nos. 1 and 2 are 130 tons capacity and the other five of 160 to 165 tons capacity. A year ago, No. 5 was rebuilt, putting in a sloping backwall and venturi ports. No. 4 has just been rebuilt in similar manner. Now under construction is a new No. 8 furnace of 160 to 165 tons capacity, also having sloping back wall and venturi ports.

Also being installed in the open-hearth building is a metal mixer of 600 gross tons capacity; a 100-ton, 4-girder crane; and a 10-ton, floor-type charging machine. Hot metal from the company's two blast furnaces is delivered to the open hearths by a fireless locomotive. Necessitated by construction of the No. 8 open hearth and metal mixer, the bessemer stripper and mold cleaning yard are being relocated.

An extension has been erected to the open-hearth stripper and a new hot top building constructed. A new



Main drive motors for cold mill with duct for vapor exhaust system overhead



AGAIN A MODERN MATERIAL SAVES WEIGHT, SIMPLIFIES DESIGN

Around an oil derrick a cat line hoist that doesn't function when wanted is of mighty little use. But it is not so easy to combine the needed strength and service capacity with simplicity and lightness.

It is not easy. But it has been done—by the use of a modern material for the hoist housing, a Molybdenum (0.65% Mo.) iron. The strength and toughness of this iron safely permits light sections. And it also helps keep construction simple. The fine, close grained structure permits the machining, in the housing itself, of surfaces sufficiently smooth to serve as outer races for the drive and drum shaft roller bearings. Premature wear or Brinelling of these races is forestalled by the hardness of the iron.

A check-up of your own materials specifications may disclose similar opportunities for simplification and saving. You will find our free technical booklet, "Molybdenum in Cast Iron," helpful.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

Climax Mo-lyb-den-um Company
500 Fifth Avenue · New York City

MOLY

raw materials building, 216 feet long and 63 feet wide, has been built adjacent to the open-hearth stockyard. This is served by a 15-ton bucket crane. A number of new bins are provided for storing additions. A new 65-ton diesel locomotive hauls stock up into the open hearth. Additional stock track has been laid in the open-hearth leanto to handle charging boxes. A new brick office building rounds out improvements in the open-hearth department.

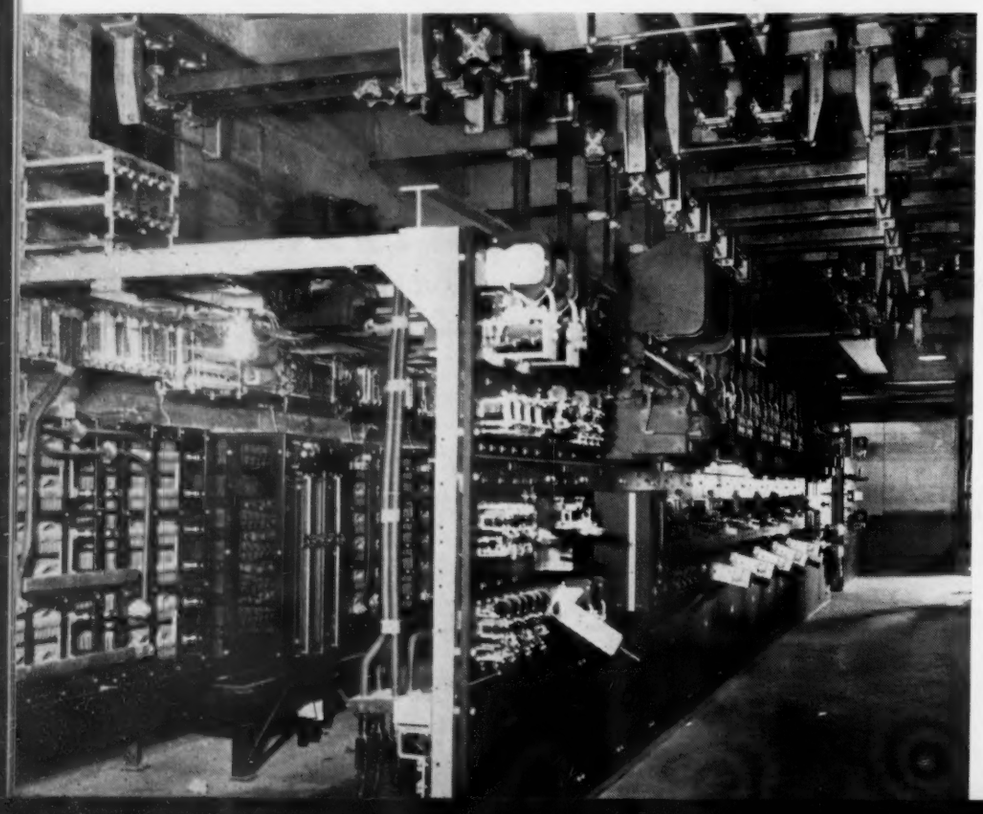
Steam Generation Modernized

Steam generation for the Indiana Harbor works is being modernized by taking out four 600-horsepower boilers and replacing them with two new boilers each capable of evaporating 150,000 to 180,000 pounds of water per hour. The new units, delivering steam at a pressure of 825 pounds and a temperature of 750 degrees Fahr., will be fired with pulverized coal, with the provision that gas can be applied at some future time. A water treating plant and ash handling equipment are included in the installation.

Electric power generation will be augmented by installation of a 10,000-kilowatt, back-pressure, noncondensing turbogenerator, from which the 200-pound exhaust steam will be discharged into the present system, which supplies auxiliary steam, as well as steam for existing condensing turbogenerators. The turbine necessitates a 60-foot extension to the boiler house.

The plant obtains its general service water from Lake Michigan and to insure an adequate supply, a new intake has been installed. Bottom of the intake is 26 feet below lake level. Pumping will be done by four 7700-gallon pumps and two 15,000-gallon pumps, one of which is new. Five traveling screens were installed. Pipe from the pump house is a 66-inch welded steel line which branches into 44-inch and 48-inch lines and connect into the present water system.

View in motor room basement showing meters, switches, control panels, wiring, bus bars, etc.



Influence of Graphite Ladle Additions Tested

■ Information on influence of graphite ladle additions now is available as result of work done by the engineering experiment station, Ohio state university, Columbus, O. and reported in "Ohio State University Studies, Engineering Series," vol. 8, No. 4, July, 1939. The investigation was to determine the best type and size of graphite to use for the additions. Although detailed results indicated the coarser sizes of artificial graphite to be slightly better, the data are not at all conclusive, and much additional work remains to be done.

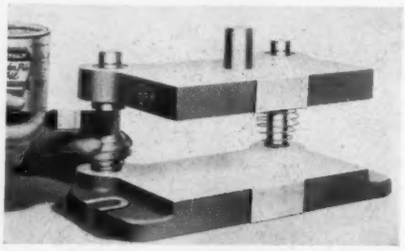
A primary object of the investigation was to determine the effect of graphite ladle additions on mechanical properties and on the chilling tendencies of the iron. The results indicate that graphite ladle additions do definitely reduce the chilling tendency of cast iron. Also, despite the reduction in the tendency to chill, the mechanical properties of iron castings are not affected in any important degree by small additions of graphite at the cupola spot.

The question of effective ladle additions of graphite on mechanical properties of iron arises because of the common practice of certain foundries making light section castings of adding graphite to the iron during casting to reduce the tendency of the iron to chill or form hard spots at the edges.

•

Automatic Oiling For Die Set Leader Pins

■ An automatic oiling system applicable to any make of die set has been developed by E. A. Baumbach Mfg. Co., 1812 South Kilbourn avenue, Chicago. The oiler consists of a compression spring and an oil-retaining ring. The oil-retaining ring is made of steel and holds an absorbent wick which fits around the leader pin of the die set and rides up and down with the punch. The low tension spring acts as a booster and lifts the ring a sufficient height on the up stroke to assure spreading a film of oil on practically the entire length of leader pin.



An absorbent wick rides up and down and lubricates the leader pin of this die set. Compression spring pushes the wick on the up stroke. Pin is kept oiled by occasionally swabbing with oil

In oiling, the press is stopped, the spring compressed by hand and the leader pin is swabbed with a brush full of oil. The wick absorbs the oil and continuous lubrication is obtained.

Roof Resurfacing Fabric

■ A saturated jute fabric claimed to lower costs of resurfacing roofs has been placed on the market by Flexrock Co., 2301 Manning street, Philadelphia. A saving in laying the material is effected since the jute fabric is nonshrinking and may be applied by rolling directly into the coating on the roof without cutting and overlapping to allow for shrinking. No cement need be applied. A roof coated with this material, the manufacturer states, should last indefinitely if coated with a low cost roof coating about once every five years. The jute fabric comes in rolls 36 inches wide.

"Yes, we could use a BETTER SLUSHING COMPOUND and we would like to know the Complete Story"

Tear Off Upper Half of Page, Fill In and Mail *Today*

Gulf Oil Corporation—Gulf Refining Company,
Room 3813, Gulf Building, Pittsburgh, Pa. s.

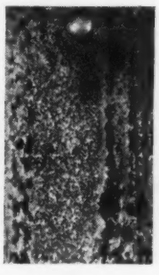
Please send me complete information and price quotations on GULF OILCOAT NO. 1.

Name.....

Company.....

Address.....

Exhaustive accelerated corrosion tests have been conducted in the Gulf laboratory to determine the effectiveness of GULF OILCOAT NO. 1 as compared with ordinary slushing compounds. The metal samples below tell the story.



Here's Proof!

These two similar pieces of metal, one slushed with GULF OILCOAT NO. 1 and the other with a conventional slushing compound, were exposed to highly corrosive influences for the same length of time. The superior value of GULF OILCOAT NO. 1 is clearly demonstrated by the perfect condition of the metal plate on the left.

GULF OILCOAT NO. 1

is easily applied and long lasting—Protects highly finished metal surfaces.

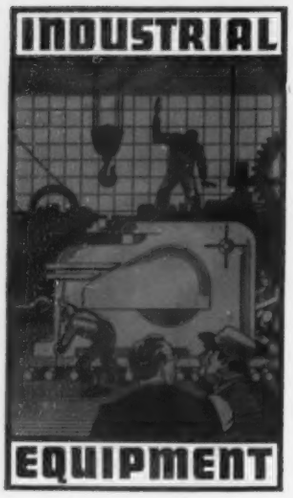
YOU can now secure an improved material to protect highly finished surfaces of steel and non-ferrous metal products against corrosion—GULF OILCOAT NO. 1. This product is an entirely new type of slushing compound, developed by Gulf technologists after many years of research and field tests.

WHILE GULF OILCOAT NO. 1 provides a thin film which is not easily rubbed off by handling, it may be readily removed by conventional solvents. Accelerated laboratory corrosion tests, as well as field tests with all types of metals, have established the superiority of this new type of slushing material over products formerly used for this purpose.

GULF OILCOAT NO. 1 can be applied by any conventional method and lasts for a long period of time. It is nominally priced and economical to use.

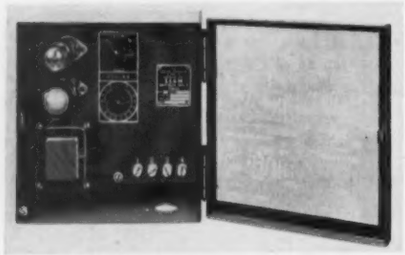
Ask the Gulf representative who calls on you to give you further details—or fill in and mail the coupon above for complete information.

GULF INDUSTRIAL LUBRICATION



Weld Timer

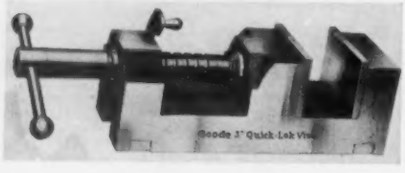
■ The EC&M Neotron weld timer announced by Electric Controller & Mfg. Co., 2706 East Seventy-ninth street, Cleveland, is an extremely accurate device operated directly from the source of power. Operation is not dependent upon mechanical adjustments or any elements affected by temperatures or atmospheric changes. Extremely fine adjustment is provided since the lower dial, representing only ¼-second timing period, travels 300 degrees between the minimum and maximum values for this small range of time.



Form 60 Neotron weld timer gives a continuous timing range from 1/120 (½-cycle) to 1 second (60 cycles). Form 120 gives a continuous timing range from 1/60 (1 cycle) to 2 seconds (120 cycles). These values of time do not include the time constant for operation of the magnetic contactor.

Quick-Acting Vise

■ Goode Engineering Co., New Canaan, Conn., offers 3-inch Quick-Lok vise for use on drilling, tapping, milling and surface grinding operations. Combination of alloy steel spindle with concentric grooves to receive latch attached to body positions jaw for major position. Telescoping Acme thread screw within spindle permits quick tightening of work between jaws.



Vise is finished ground and is square on bottom, both sides and tail end. Body is made of semi-steel casting. Nut for screw is hardened bronze. Jaws are steel pack hardened and ground. To operate, lift lock plate from groove in spindle. Slide movable jaw against work to nearest groove. Drop lock plate in groove. Turn handle operating screw clockwise. Overall width and width of jaws are 3 inches. Maximum jaw opening is 3⅛ inches; depth of jaws is 1⅞ inches; net weight is 12 pounds.

Belt Grinder

■ Fisher Scientific Co., 711 Forbes street, Pittsburgh, offers an enclosed belt grinder employing Fisher grinding belts for rough or fine grinding of metallurgical specimens, either micro or macro. It has a ¼-horsepower motor that drives one of the two pulleys on which belts of various grades of roughness are revolved. Specimens are held against the revolving belt until a surface free from ridges or other blemishes is obtained.

An open space at the top of the housing allows the operator to press the specimen against the belt without the danger of catching his clothing in the moving parts. Housing can be lifted away to facilitate cleaning of the machine and changing of grinding belts.

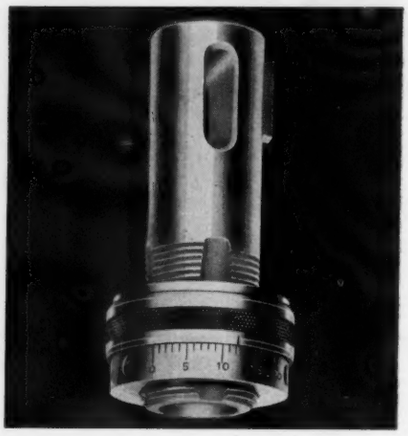
Belt tension is maintained by a weight operating on an eccentric shaft. This weight is merely lifted

to relieve the tension and remove the belt.

Grinding belts can be had in five grades of grit. They are four inches wide and are made with a 45-degree seam which is of uniform thickness and does not "bump."

Adjustable Micro-Nut

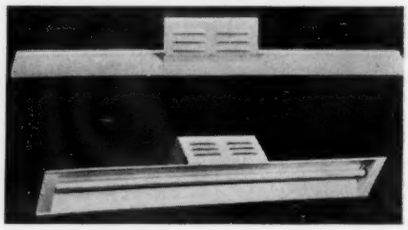
■ Gairing Tool Co., 1630 Lafayette boulevard, Detroit, announces an adjustable micro-nut for either single or multiple spindles. The micro-nut is claimed to set end-cutting tools to correct length and multiple spindles in proper relation to each other.



This device permits adjustments from 0.001 to 0.020-inch by an adjustable sleeve which works independently of the screw. Relative position of the cutting tool can be extended or retracted and measured adjustments made without guessing or interfering with tool setup.

Lighting Units

■ Flex-O-Lite lighting units for use in stores, windows, displays, plants, warehouses, offices, etc., are announced by Flex-O-Lite Co., St. Charles, Ill. These lights approach true daylight, yield 40 lumens per watt and last 5000 hours. It is claimed that they eliminate objectionable glare, deep shadows, eye

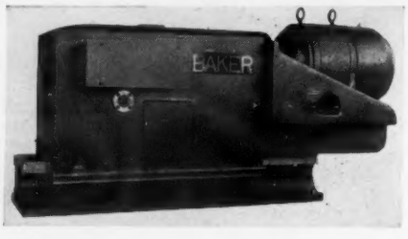


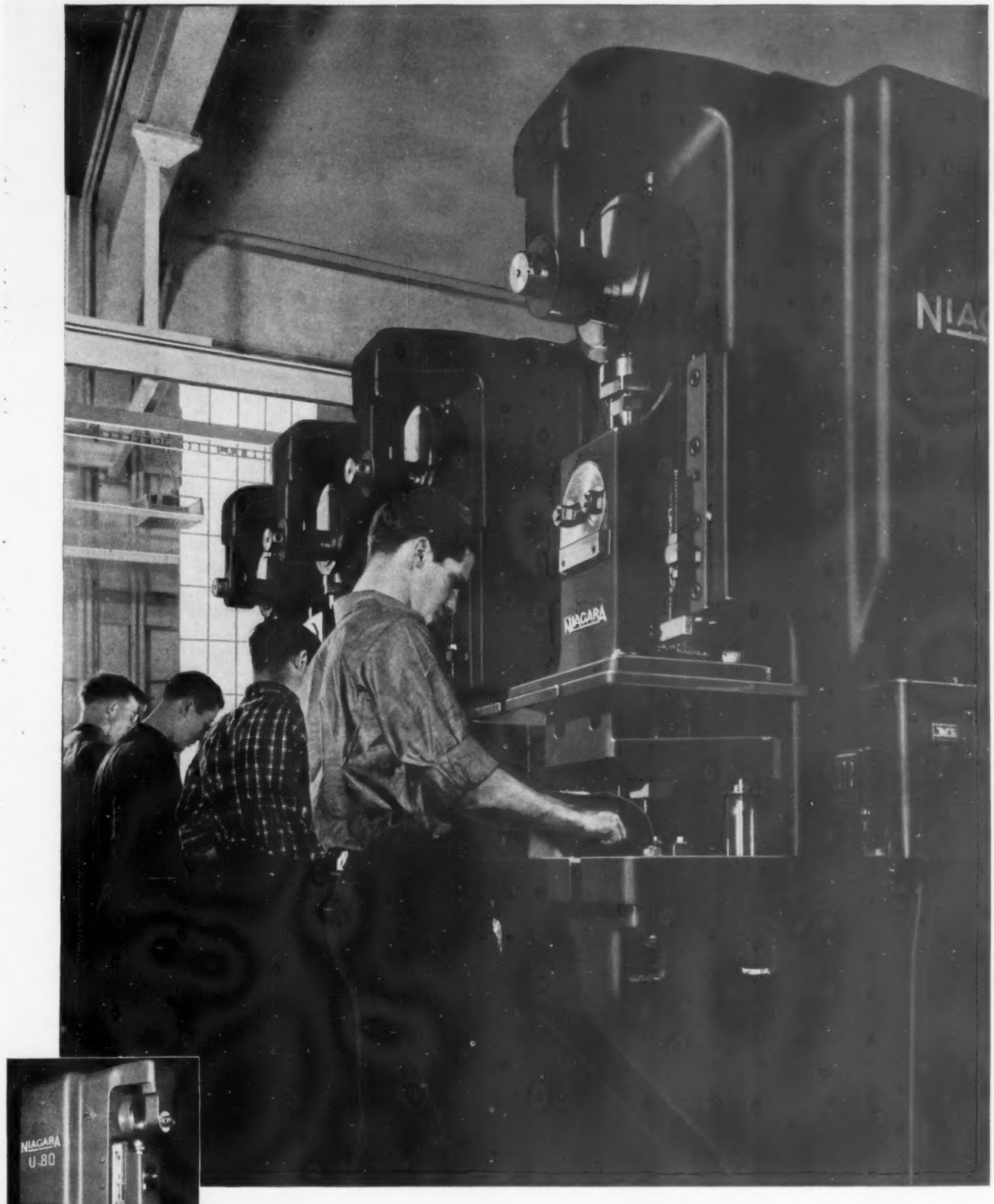
strain and early fatigue and show objects in their natural colors without distortion.

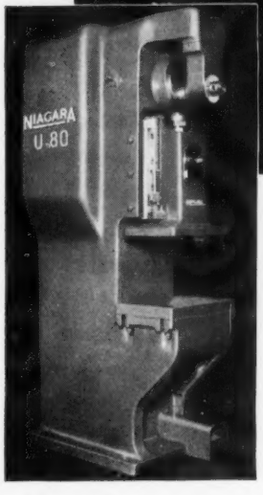
Model HC-10 has one tubular lamp and model HC-12 has two. The reflectors measure 8 x 8 x 58 inches. The power consumption of 110-200 watts will give two to three times the light respectively of incandescent lamps using the same current. Power factor is 90 per cent.

Self-Contained Drill

■ Baker Bros. Inc., Toledo, O., offers a flexible hydraulic-feed drill having easy adjustment of feeding lengths and rates for single and







This group of Niagara Streamlined Presses is one of several batteries totalling over a hundred Niagara Presses recently installed in the plants of one of the world's largest automobile manufacturers.

Because Niagara Streamlined Presses are completely self-contained and require comparatively little floor space, they can be placed close together so that operators can pass the work from one to another, thereby decreasing handling costs on successive operations. When rearrangement of the production line is needed, it is a simple matter to move these machines because of their compact design and integral motor drive. Instant acting Niagara 14-Point Engagement Sleeve Clutch and anti-friction mounted gears operate in oiltight case. Niagara Machine & Tool Works, Buffalo, N. Y. Branches: New York, Cleveland, Detroit.

—Advt.

multiple spindle drilling, boring, reaming, counterboring, hollow milling, chamfering and facing operations.

Maximum head travel is 12 inches and length of saddle 26 inches. Cylinder bore diameter is 2.250 inches. Flange on front of drill for adaption of multiple head is 13 x 14 inches. Speed range of spindle in extension for single spindle operations is 200 to 500 revolutions per minute. Unit can be mounted vertically, horizontally or at an angle.

New design delivery pump requires a minimum of horsepower for drive and leaves practically all of the power of driving motor for the torque lead applied to the unit. A two-feed cycle is standard, and positive stop and delayed reverse are available.

Voltage Regulator

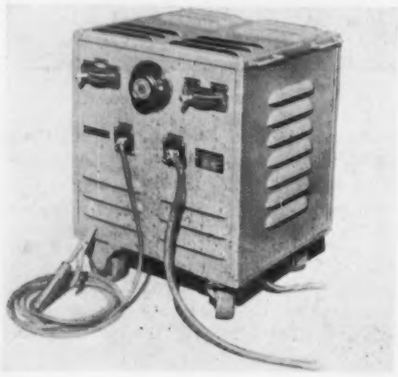
■ Diactor generator-voltage regulators for use with alternating and direct-current machines are offered by General Electric Co., Schenectady, N. Y. The new regulator, an improved streamlined design of the type GDA generator-voltage regu-

lator, is available in six ratings for generators rated 15,000 kilowatts, 3600 revolutions per minute and smaller machines at correspondingly lower speeds. The smallest is for generators up to 25 kilowatts.

The quick-action, wide-range rheostatic-type regulator contains an improved torque element which eliminates all pivots and bearings. A selfaligning spring suspension precludes all maintenance at this point. A great reduction of weight in the torque assembly has cut down the inertia providing a smoother regulation curve.

Low-Current Arc Welder

■ Allis-Chalmers Mfg. Co., 1126 South Seventieth street, Milwaukee, announces the Weld-O-Tron, a low-

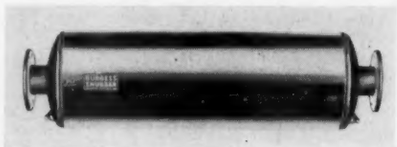


current electronic arc welder for precision work. It can be used to weld with currents as low as 5 amperes using 1/32 and 3/64-inch electrodes. Steels, stainless steels and other metals lighter than approximately 18-gage can now readily be welded. It is stated that sheets as thin as 0.010-inch can be handled without difficulty.

Welder uses a multiple-tube polyphase mercury-vapor rectifier. Controls and terminals are of the dead front type. The Weld-O-Tron will be shown at the National Metal Congress Exposition, Chicago.

Small Snubbers

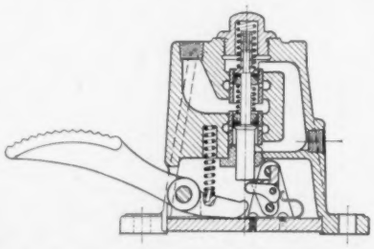
■ Acoustic division of Burgess Battery Co., 500 West Huron street, Chicago, announces SDHC series snubbers covering a range of standard pipe sizes from 1 to 32 inches. Both



size and weight have been reduced. Concentric connections have been substituted for eccentric connections to facilitate installation. Sizes 1 to 4 inches are provided with nipple connections, while sizes 5 inches and larger are provided with flange connections.

Hand And Foot Valves

■ Logansport Machine Inc., Logansport, Ind., offers a complete new line of small, compact foot and hand valves having full pipe volume air flow and made in sizes from ⅜ to 2-inch pipe. Valve seals are self cleaning and piston cup

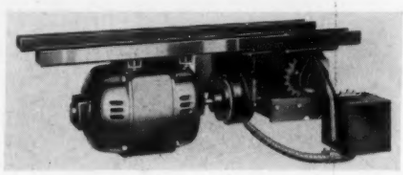


packing is easily removable for repairs without disconnecting pipe lines. All parts in contact with air are made from rust-proof materials. Due to a balanced piston design little normal effort is required to operate these valves.

The foot valve is made for two combinations of cycles. When latch control dog is in first position, the operator steps on foot pedal and valve piston latches in up position. The next time operator steps on foot pedal the latch releases and valve piston returns to down position. When latch control dog is in second position and the operator steps on pedal the valve piston goes to up position. When operator removes his foot the valve piston returns to down position.

Electric Door-Operator

■ Barber-Colman Co., Rockford, Ill., offers model MC electric door operator for overhead-type doors where short contact on the opening stroke



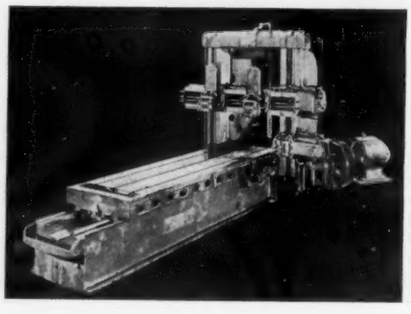
and constant contact with automatic reversing on the closing stroke is desired to prevent accidents caused by vehicles or persons attempting to go through the doors while they are closing. The attendant must hold the "close" button throughout the entire closing stroke. If it is released while the door is closing, the motor will instantaneously reverse, causing the door to reopen.

Centrifugal clutch operates uniformly regardless of changes in humidity and temperature and will slip when the normal driving load is exceeded by more than a reasonable amount. Magnetic brake stops the door. Worm and worm gear speed reducer run in oil. A manual release disengaging the sprocket from its shaft permits manual operation of the door in case of power failure.

Spiral-Gear Drive Planer

■ William Sellers & Co. Inc., 1636 Hamilton, Philadelphia, announces the "Power-Flow" planer having the Sellers spiral gear drive. Standard railheads of planer have 64 feeds from 1/64 to 1 inch and their slides have 64 feeds from 1/128 to ½-inch; the side heads also have 64 vertical feeds from 1/64 to 1 inch. Cutting speeds range from 25 to 75 feet per minute and return speeds from 50 to 100 feet per minute.

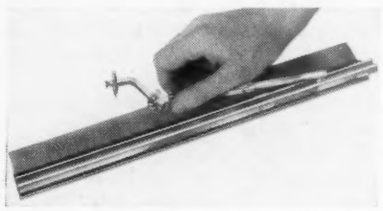
Compound table ways are claimed to eliminate any climbing of the table caused by unequal expansion of table and bed. Tool apron has horizontal T-slots its full width to provide greater variety of tool positions and tool-holder abutment is



adjustable. Tool slide has 2/3 of its travel below the crossrail with full length bearing surface at every point of its travel. Micromatic controls are centralized and back crossrail has a full section from upright to upright.

Lettering Set

■ A fast, economical lettering set announced by Eugene Dietzgen Co., 2425 Sheffield avenue, Chicago, will produce eight different types of lettering with one single guide simply



by changing the setting of the tracer and the pen arm.

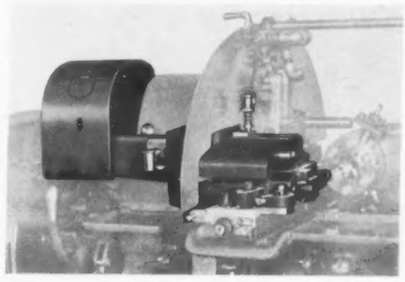
Letters are formed in one continuous movement without shifting the guide as each character on the guide is complete and in alphabetical order. The guide is precision-built of plastic material and has upper and lower case letters, numerals and characters. Proper positioning and spacing of letters are made easy by the spacing markers. The outfit is packed in a portable mahogany case complete with all supplies, including six different weights of pen points from extra light to extra bold.

Chasing Attachments

■ Thread chasing attachments announced by Brown & Sharpe Mfg. Co., Providence, R. I., permit rapid production on Brown & Sharpe automatic screw machines (high speed) Nos. 00, 00G, 0, 0G, 2 and 2G of threads of particularly accurate form, lead and pitch diameter, such as are often required on parts for timing mechanisms, electric meters and similar devices. The attachment is also of advantage in producing threads at the back of a shoulder on parts which cannot be satisfactorily threaded by other methods.

Attachment shaft is gear-driven from the spindle of the machine, assuring perfect synchronization between spindle rotation and operation of the attachment. The chasing tool is carried on a double slide assembly mounted on the front cross slide of the machine, and the thread is produced by several passes of the tool along the work, cutting in one direction only. The tool-carrying mechanism operates only while cutting threads.

Change gears are furnished for cutting threads of either of the following ranges of pitch: 13, 14, 16, 18, 20, 24, 28, 32, 36 and 40 threads per inch, or 0.5, 0.75, 1.0, 1.5, 2.0 and 2.5 millimeters lead.



The attachment may be arranged to cut either right-hand or left-hand threads at any setup; and the spindle of the machine may be run either forward or backward.

Dowmetal Spray Gun

■ Model "BC" series No. 12 spray gun constructed of Dowmetal incorporating strength with extreme lightness is announced by Willard C. Beach Air Brush Co., Harrison, N. J. Dowmetal was selected for this use because of its ready machinability and because sand castings can be produced without die-forging expense.

The low density of Dowmetal permits a large gun grip and perfect balance without coring. The thread seizure is also considerably less than with dissimilar metal parts. This magnesium alloy metal permits a very successful seating of the air valve. Exclusive of parts, this new gun weighs 287.7 grams.

Steel Filling Stations Use Welded Sectional Panel Construction

By W. H. DUETTING
Wilson Welder & Metals Co. Inc.
New York

■ MAKING use of its extensive facilities for cutting, forming and welding steel, the Columbian Steel Tank Co., Kansas City, Mo., has designed and is in production on a varied line of factory fabricated steel houses, barns, roadside stands and filling stations. The latter, illustrated in the accompanying photograph, are of welded sectional panel construction.

Panels are made of 2 x 2-inch angles and 16-gage sheets, arc-welded. For welding the angles, 5/32-inch electrodes are used, and ⅛-inch for the sheets. The combination restaurant and filling station shown here requires about 1000 labor hours to prefabricate and about a week to erect, with four men. The total amount of welding is about 1200 feet, all of which is done in the shop. Field assembly is entirely by bolting. The building illustrated costs about $5000 complete as compared to about $6000 for the cheapest all-brick building.

Indicative of the growing demand for steel buildings is the following table which Columbian Steel Tank Co. has compiled from records of steel mills, of orders for steel sheets to be fabricated into building sections:

Type Bldg.	1910	1920	1930	1938
Steel houses.....	3	50	300	2,000
Steel service stations	50	150	700	5,000
Sectional steel industrial bldgs..	150	1,000	6,000	10,000
Steel lease houses	0	10	15	300

■ **Factory fabricated steel filling station and roadside stand in Algoma, Iowa, has an added touch of modernity in panel of glass brick**

Gear Makers Review Advances in Production, Finishing Processes

■ MATERIALS for gears, methods of producing and finishing gear teeth, production costs, and the economic situation were subjects commanding major attention at the twenty-second semiannual meeting of the American Gear Manufacturers association in St. Joseph, Mich., Oct. 16-18. Attendance approached 100, pressure of current business holding the total below the customary figure.

According to President Charles F. Goedke, president, Ganshow Gear Co., Chicago, and Secretary-Manager J. C. McQuiston, Wilkinsburg, Pa., association membership in all classifications is now 101. Latest addition to the role is United States Electric Motors Inc., Los Angeles. Several amendments to the constitution and by-laws, covering details of sustaining membership, presentation of papers and distribution of association data were adopted.

Superfinishing on Gears

Details of the superfinishing process were outlined by J. M. S. Hutchinson, production research department, Chrysler division, Chrysler Corp., Detroit. This interesting new surface finishing process was described in STEEL for Sept. 26, 1938, p. 36. As to its application on gears, Mr. Hutchinson pointed out, difficulties are encountered in developing suitable abrasive stones to follow gear tooth contours, and it has been attempted only in an experimental way. However, success of the process on such parts as pistons, valves, brake drums, crankshafts, camshafts, and the like, suggests the possibility of extending it to gears eventually.

Manufacturing advantages of superfinishing parts were summed up as follows: Controlled surface quality; minimum machining time, standardized equipment; simple preliminary operations, and minimum abrasive cost.

For gears, the problem is to "ferret out" specifically where it can be applied profitably, according to W. P. Schmitter, Falk Corp., Milwaukee. He agreed that superfinishing would eliminate the run-in period and the need for excessive clearances, would extend normal life because of reduced friction and improved lubrication, and would avoid damage to metal surfaces due to premature overloading. Falk Corp. has tried superfinishing on journal bearings of some large marine units, but as yet has not determined benefits.

Granger Davenport, Gould & Eberhardt, Newark, N. J., reviewed the difficulty of applying superfinishing to gears, chiefly because of the virtual impossibility of obtaining "area contact" between abrasive stone and the work such as is maintained in flat and cylindrical surfaces now so finished. The only alternative seems to be "line contact," but this would increase the time and cost considerably.

Some fundamentals often overlooked in the operation of gear cutting machines and in jobbing work in this field were discussed by U. Seth Eberhardt, Newark Gear Cutting Machine Co., Newark, N. J. He suggested that in quoting on a gear job it is essential to have enough information on what the customer expects, together with drawings or rough sketches, limits on accuracy and type of service. He also advised keeping a record of all finished jobs, showing the actual cost of the gear and the sales price, to assist in figuring new work. On rush work, a 25 per cent premium is reasonable to cover the special attention and supervision accorded such jobs.

A gear can be no better than the accuracy of the blank, said Mr. Eberhardt, and he added that his company has found it economical to spend a little more time in turning blanks to insure the hole, outside diameter and sides running with each other. He cited the case of a customer who could not discover why his hobbing machine was producing cam-shaped gears. It was found that cast steel blanks had not been annealed thoroughly and as teeth were cut strains were relieved and the rim bulged. Recommendations were made to rough out about two-thirds of the depth, then wait a short time before finishing. This eliminated the difficulty.

Determine Backlash Allowances

Discussing Mr. Eberhardt's contribution, J. A. Holey, D. O. James Mfg. Co., Milwaukee, emphasized that vague requests from customers are one of the main sources of trouble in the jobbing gear business. He advised gear manufacturers to determine backlash allowances if operating conditions are known, since the customer usually specifies too little. He added that in supplying replacements, it is advisable to have on hand the mating gear if a serviceable replacement is to be manufactured.

That cost determination is not a mystery was the thesis of Paul Christenson, Cincinnati Gear Co., Cincinnati, who discussed the cost of single-lot gear production versus that of quantity production. He prefaced his remarks by deprecating the unique pricing theory based upon the question, "What must we quote to get the job?" He then proposed an algebraic formula for computing machine hour costs (X) by substituting known quantities and solving the equation: $X = K + \frac{L + B}{O}$ where K is the cost per hour of operating each machine tool exclusive of rent, burden or direct labor; L is direct labor per man-hour, B is burden per man-hour, and O is the number of machines to which the operator is assigned. Naturally, factors K, L and B are made up of a number of components, all known quantities. Equations were set up by Mr. Christenson for determining these factors.

Analyzing the procedure involved in handling an order whether for a single gear or for quantities, he listed 11 elements all having a vital bearing on costs: Planning and executing advertising, traveling costs, answering inquiries, entering orders, planning of factory procedure, securing the correct materials, general and specific supervision, spoilage loss, inspection, shipping and collection.

Gear Materials Reviewed

Trends in nickel-steel and cast-iron gear materials were reviewed at length by C. M. Schwitter, development and research department, International Nickel Co. Inc., New York. He cited three important and interrelated factors which have contributed to gear progress—better gear design, improved gear materials and revised methods of fabrication. Selection of any alloy steel for a specific gear application is governed by two points—mechanical properties and fabricating properties—both heavily dependent upon the costs involved.

Two types of alloy steels generally are used for gears—carburizing or direct-hardening — distinguished chiefly by their carbon content. Nickel carburizing steels are used mostly where exceptional toughness in the underlying core, combined with the highest degree of wear resistant surface, is required. Heavy-duty applications are served best by the more highly alloyed types such as S.A.E. 4815, 2515 and 4320. Intermediate types are represented by S.A.E. 2315, 4615 and 3115.

Direct-hardening nickel alloy steels provide greater core strength than the carburizing grades by virtue of their higher carbon content, but lack the peak wear re-

ADVERTISING PAGES REMOVED

sistance of the carburizing types. Surface hardness of the direct hardening steels generally is improved by use of a cyanide bath for the heating medium. In this grade, S.A.E. 2350, 3150, 3250, 3450, 4340 and 4640 are representative.

Direct-hardening gears often are machined after heat treatment, particularly in the machine tool industry. S.A.E. 4340 nickel-chrome-molybdenum steel has enjoyed popularity because of its machinability at relatively high hardness—450 brinell and higher. Any alloy steel which responds satisfactorily to direct hardening treatments also should be capable of flame hardening, a popular selective hardening treatment in the gear industry. Some gear and tool manufacturers have standardized on S.A.E. 4640 nickel-moly steel for flame hardened parts.

Cast Iron Gears

Concept of what is suitable for cast iron gears, according to Mr. Schwitter, differs appreciably from the picture presented for wrought alloy steels, since cast iron may be more or less "tailored" to order, whereas wrought steel gear materials must be selected largely from available S.A.E. compositions. In the case of cast iron, however, the gear manufacturer's choice must include consideration of the casting qualities of his specified analysis. Hence close co-operation between manufacturer and foundry is essential, and the added problem of castability becomes as important a factor as service properties and ease of machining.

Cases have been reported in which manufacturers of large gears found their cast-tooth gears possessed greater wear resistance than cut-tooth gears, because the machining operation involved in preparation of the latter involved removal of sufficient surface material to expose a relatively soft underlying structure.

Use of heat treatment to improve properties of cast iron gears originated in Europe and has been adapted successfully to American practice, but not yet to the widespread extent that may some day be expected. Some producers practice a simple stress-relief anneal at temperatures up to 1000 degrees Fahr. for the purpose of removing casting strains and promoting toughness. Improvements in strength and hardness are achieved by a quench followed by a draw.

Increasing use of ground gear tooth profiles, especially in the aircraft, automotive machine tool, diesel engine and turbine industries, has brought the development of gear grinding machines to a new high level, in the opinion of John Dixon, Pratt & Whitney division, Niles-Bement-Pond Co., Hartford, Conn. He described various makes of gear tooth grinders, which are of two types—the generating type and the form wheel type.

Mr. Dixon examined in detail various elements in gear grinding procedure, including the preparation of the gears for grinding, work holding means, coolants, wheels and related factors.

F. A. Firestone, University of Michigan, Ann Arbor, Mich., presented some random thoughts about gear noise and its causes, which provoked an unusual amount of discussion.

Interspersed throughout the meeting were reports of various association committees, including those active on industrial relations, commercial phases, uniform cost accounting, technical standards, inspection tolerances, proportions for industrial gears, specification of lubricants, and enclosed gear drives.

Ringing defense of industry's contribution to civilization and a plea for better co-operation between all elements in the nation's industrial structure were voiced by S. Wells Utley, president, Detroit Steel Casting Co., Detroit, speaking at the banquet, Oct. 17. Since the turn of the century, and more especially during the last seven years, he stated, there has been an increasing tendency to belittle the virtues of thrift and saving; to sneer at the efforts of those engaged in productive industry; to impugn the motives of business men.

New Attitude

This is a new attitude in America, although it is old in the annals of the race. Here, until recently, the men who have changed a few weak, struggling, despised Colonists into the world's mightiest and happiest country have been not without honor among their fellow men. But in the world at large, previous to the industrial revolution, this attitude of looking down upon business has been common.

We little realize how much of all scientific thought and discovery rests directly upon the products of industry, the speaker asserted. That which we call progress has not come because the mind of man is better than it was thousands of years ago, but because developments of industry have enabled those minds to accomplish results impossible in former times.

We hear much of the attitude of industry toward war, forgetting entirely that the answer to that question is written large in the story of the past. Going back as far as we can in the history of the human race, we find that industry has flourished only where the state or industry itself has been able to protect it from the pirate, the brigand and the results of tribal warfare.

Industry has been defined as, "The co-operative effort of brain, labor and capital to add value to raw materials." Perhaps that is as good a definition as any, Mr. Utley said, especially if we interpret it broadly and realize that such things as transportation add value to materials by taking them from a place where they cannot be used to a place where they meet a demand.

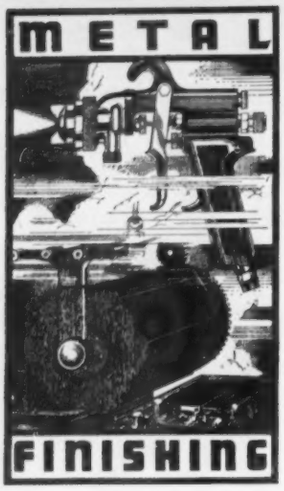
Great Change Since 1933

During the last four decades, and especially since 1933, we have seen a staggering change in the situation, he continued. Practically every law enacted by the federal government since the advent of the present administration has increased power and authority of the government over the life of the individual and over state and local governments; has consistently taken away some of the rights of the individual to control his own life and has transferred these rights to federal power.

If civilizations of the past have flowered only when industry reached the heights of prosperity, if cause of the rise of American industry has been release of the initiative, the daring, the ability, and the energy of the individual American by a political system which gave him the maximum of freedom from government interference, and if it is equally true that during the last seven years we have reversed that system and have dampened his ardor and shackled his efforts by increase in government regulation, restrictions and regimentation, is it any wonder that unemployment has been increasing, that demands for relief are rising, that for the first time in our history the end of a decade finds us with a lower national wealth and a lower national income than the beginning of that decade? Is there any logical reason to believe, Mr. Utley concluded, that so long as this policy is continued we shall get rid of this depression?

Repair Service For Carbide-Tipped Tools

■ A repair service for cutting tools tipped with tungsten carbide is announced by Carbide Tool Salvage division of Super Tool Co., 21650 Hoover road, Detroit. Services rendered include altering, repairing, expanding, regrinding and diamond lapping all cutting tools, drills, lathe centers and wear parts.



Enamelers' Forum

From advances made in fine milling, it appears that 1 per cent on 200 mesh is present limit although some excellent results have been obtained with 1 per cent on 325 mesh . . . Water softeners found advantageous in cleaning work

■ REGISTRATION at the fourth annual forum of the Porcelain Enamel institute held at Ohio State university, Columbus, O., Oct. 18-20, included some 200 representatives from all branches of the industry.

At a meeting of the committee on standardization of tests, it was decided to make slight changes in the standard test for acid resistance to make it more acceptable commercially. A subcommittee representing all branches of the industry was appointed to devise a shop test for acid resistance. More experimental work with the tentative test for abrasive resistance was considered necessary before allowing this test to become a permanent standard.

The porcelain enamel research fellow, Dr. Paul Smith, reported on progress of the development of a standard test for chipping. Dr. Smith already has classified causes of chipping into torsion, impact, spontaneous and thermal shock.

At the symposium on fine ground enamels, E. W. Dietterle, American Stove Co., 825 Chouteau avenue, St. Louis, said their experience with 1 per cent on a 200-mesh compared with 1 per cent on 325-mesh was that it required four hours for the additional milling. This 28 per cent increase in milling time, however, was more than offset by a gain of 40 per cent in the area covered by the finer material. There was no trouble with tearing, the fine enamel easily brushed and the 40 per cent reduction in weight of enamel applied had no effect on burning. Advantages appeared to be less orange-peel effect, chipping, warpage and blistering. A thickness ranging from 0.018 to 0.020-inch had been reduced successfully to 0.009 or 0.010-inch as a minimum with usual thickness being from 0.012 to 0.015-inch.

Fine Milling Discussed

C. T. Gordon, Porcelain Metals Corp., Louisville, Ky., in discussing the subject of fine milling, related his experience in a job shop. His company first tried 1 per cent on 325-mesh but obtained poor results and so went back to 2 grams on 200-mesh, which was but a little change from previous material. Very good results were obtained on the first run, but use of fine milling in the finish coat showed up imperfections in the ground coat to such an extent that improvement in the ground coat was necessary. The improved ground coats provided excellent results when used with the fine-milled finish coat.

Mr. Gordon stated the fineness will be reduced still further and work will be done on the ground coat to improve it. In a subsequent discussion it was emphasized that use of fine-milled cover coats accentuated ground coat defects to such an extent that an almost perfect ground coat is necessary for good results.

Experience of A. J. Lindemann & Hoverson Co., South Sixth street and West Cleveland avenue, Milwaukee, as related by T. Hartshorn was that 1 gram on 200-mesh gave good results but that much trouble was encountered when finer material of 1 gram on 325 mesh was used. Control of soluble salts was believed a most important factor in use of fine-milled enamel.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., first tried fine milling in 1935 according to J. B. Simon, but rather poor results were obtained at that time. Due to increased interest in fine milling, 1 gram on 325 mesh was tried early in 1939, but with difficulty in brushing and tearing. In August this year, a definite program was worked out to obtain the advantages of fine milling and yet to avoid the difficulties.

Members of Porcelain Enamel institute attending the fourth annual forum at Ohio State university, Columbus, O., Oct. 18-20, 1939

It was recognized that application differed, that properties of the material were changed with fine milling and that cautious development was necessary. Accordingly, it was decided to drop 1 gram in fineness per month until 1 gram on 200-mesh was reached. Now, after two months with two 1-gram drops, they are using 5 to 6 grams on a 200-mesh screen with production considerably increased and only a 16 per cent increase in milling time. They have encountered no trouble in handling the enamel or in spraying it, although some enamel has been doped with sodium nitrite to control the set.

Other advantages reported include a slightly faster burning rate, a considerable improvement in appearance and a drop in average thickness from 0.013 to about 0.011-inch accompanied by fewer assembly and field losses. According to Mr. Simon, their conclusions are that while first fine milling may necessitate increased milling facilities, it may in the end be compensated by the fact that less enamel need be milled as more and more coverage is accomplished with finer milling. Also, some frits definitely are more suitable for fine grinding than others. A change of spray heads and reduced spray pressure are probable steps. Brushing and handling are still problems. They plan on reducing fineness further month by month until the disadvantages overweigh the advantages obtained.

Ground Material Compared

Corroborating the experience of others with fine milling, Norman Stolte, Enamel Products Co., Eddy road and Taft avenue, Cleveland, pointed out that fine-milled cover coats introduced and magnified defects in the ground coat. They found hand spraying with special guns was necessary. One gram on 200-mesh sodium pyrosulphate added gave good results.

Tests comparing regular, medium and finely ground material were detailed by Mr. Stolte. With sign yellow, finely ground material gave a brighter color and increased gloss. With pastel green, finely ground material weakened the color, and best results were obtained from regular grind. Similarly, with grass green the finer material weakened the color which appeared best with the regular grind. With light blue, coarse grind gave the best color; but with royal blue the fine grind gave purest color. Summarizing the tests, greens appeared not suitable for fine grinding, but with grays, yellows, reds and blacks a definite improvement was obtained by fine milling.

Another company now standardizing on use of material ground 1 per cent on 200-mesh is the Edison General Electric Appliance Co., 5600 West Taylor, Chicago. According to G. E. Terry, their experience with 1 per cent on 325-mesh was unsatisfactory, but they are obtaining good results with the slightly coarser material, 1 per cent on 200-mesh with 4 per cent opacifier. They are spraying 48 grams on one coat but are using two thin coats on most material. Reducing fineness of ground coat to 1 to 2 per cent on 200 also reduced orange-peel effect. Main advantages appear to be elimination of sag, better texture and color. Thickness was reduced from 0.015 to 0.010-inch; with no increase in reoperations; ground and cover coats are being burned at increased speed; chipping has been reduced. They feel they are getting a better quality ware at about the same cost. Where they formerly sprayed from 60 to 65 grams per square foot, they now are spraying from 38 to 40. Still further fineness is contemplated.

Increase Laboratory Control

From the above papers and subsequent discussion, it appeared evident that use of 1 per cent on 200-mesh was about the present practical limit although some excellent results have been obtained with 1 per cent on 325-mesh. In the discussion, it was emphasized that use of fine-milled enamels must be accompanied by increased laboratory control for best results. As a possible solution to some of the spraying difficulties encountered with the finer material, it was suggested that sodium pyrophosphate additions might prove valuable in relieving too much set.

One plant found use of recirculating ground-coat tanks greatly improved the ground coat, which must be as nearly perfect as possible if good results are to be obtained with the fine-milled cover coat. This plant reduced their scrap 40 per cent, attributed largely to the recirculating system.

In the sheet iron and hollow ware session, E. H. Shands, George D. Roper Corp., Rockford, Ill., discussed results they had obtained in use of softened water in cleaning and pickle rooms. A study of soapy emulsifier losses revealed as much as 61 per cent of the soap lost as insoluble products caused by hard water. In addition, these insoluble products caused many cleaning difficulties. In fact, this company found the saving in metal cleaning alone was greater than cost of softening the water. They use a commercial zeolite softening system which gives water of practically zero hardness for cleaning and rinsing tanks. In addition, it gives complete absence of insoluble soaps with no scale on tanks or heating coils, reduces consumption of cleaner and greatly extends life of the cleaner. Possibly what is most important is the increased rinsing efficiency.

In the discussion that followed, it was emphasized that perfect regeneration of the softener must be obtained; otherwise, disastrous results occur. One shop employs distilled water returned from steam lines and is obtaining beneficial results similar to those mentioned above. Use of distilled water to reduce the calcium content was suggested to the groups.

Discussing drawing compounds, G. W. Dykstra, Kelvinator Corp., 14250 Plymouth road, Detroit, recommended that only one compound be used in the press room and that this be diluted as necessary for each individual job. He detailed methods of testing drawing compounds for use on materials to be porcelain enameled and stated these testing methods had enabled them to reject in the laboratory 90 out of 100 compounds, thus greatly reducing the number that had to be production tested. This eliminated endless production testing otherwise necessary.

It was pointed out that for best results, a drawing compound containing no pigment should be used. If the press room foreman desired to use pigments, attention was called to the possibility of substituting china clays. Replacing pigments with these clays eliminates trouble encountered in cleaning off drawing compounds containing pigments. With china clays, it is essential to avoid use of oxidizable oils. With this consideration the statement was made that china clays can replace successfully any type of pigment in drawing compounds.

Ventilating Hoods

Detailed recommendations for proper ventilating hoods and systems were made by M. A. Snell, Hartford Accident & Indemnity Co., Hartford, Conn. He described a number of interesting new ventilating systems including a push-pull type which requires the handling of little air yet has high ventilating efficiency. It is most economical from a power-consumption standpoint.

In the architectural session, A. C. Weierich, Davidson Enamel Products Inc., Lima, O., discussed problems confronting the job shop in handling architectural porcelain enameling. He emphasized that possibly the most important item in doing this work was to exercise proper judgment in setting inspection lim-

(*Please turn to Page* 74)

Gaging Methods

(*Concluded from Page* 41)

gotten out of the inner sanctum of the tool room and into the production line, just consider Fig. 2. At this point in the Chrysler production line (one of many similar stations) at least $10,000 worth of modern instruments of measurement are in use.

These include, for instance, a number of electrical gages which check top and bottom of the four ring grooves in pistons, as well as indicator-type gages which check piston diameters within 0.00025-inch. Operation of these instruments eliminates "feel" entirely and is so rapid that a few checkers easily keep pace with a very large force of producers.

Surface quality is another thing which has been taken out of the 'look and feel" category and put on an exact basis through use of instruments. Consider Fig. 4 which depicts the routine operation of exact testing for smoothness of the super-finished crank pins of a Chrysler crank shaft. The instrument involved is an electrically operated profilometer which "explores" the surface with a needlepoint whose "findings" are telegraphed to a dial reading in microinches—or in the language of the micrometer, to "millionths."

The system of precision setting illustrated by the Pratt & Whitney jig boring machine, Fig. 1, is one which rapidly is become more common in production machines—just as the use of such jig boring machines is becoming more common on exacting production work. Note the "stack" of precision gage blocks lying end to end in the trough in the bed to the right of the operator. Through the use of these blocks, in conjunction with the dial gage which can be seen at the end of the stack of blocks, the work table can very quickly be set to a fraction of thousandth without any question of "feel" entering into the setting.

Another very important matter in connection with the manufacture of modern high speed mechanisms, is that of balance. Therefore the testing of balance of parts has become very important in the realm of gaging. An example of this is given by Fig. 3, which shows the dynamic balancing of the rotor of a Westinghouse motor. The instrument in use here is a stroboglow balancing machine which makes use of the apparent stoppage of rapid motion achieved through the controllable high-frequency "flickering" of a special type of lamp.

Through the use of modern balancing machines—of which this is only one of many types, static and dynamic balance of revolving parts not only is detected, measured and "spotted," but in some cases is quickly and accurately corrected right in the gaging machine. Such instruments are vitally important not only in automotive and aircraft work, but also in the building of modern high speed machine tools.

FOR *Extra Long Hauls* choose the CAB CONTROLLED
A-E-CO LO-HED HOIST

When — 1. Hauls are exceptionally long. 2. Many bays must be served. 3. The path under hoist is obstructed. 4. Speed is essential —

The motor trolley, cab controlled A-E-CO Lo-Hed Hoist — motor trolley with cab trailer — is the best to use.

For high-lights of this hoist see A-E-CO POINTS (below). For full details of Lo-Hed hoists, send for our new catalog today.

A-E-CO POINTS

- Lo-Heds range from 1/4 to 12 ton capacities (above type available from 1 to 12 tons).
- Operates on Standard I-beam or track of any make.
- Low headroom — stacks materials higher than any other hoist.
- Safe, fool-proof.
- Compact, strong, simply constructed.
- Protected against dust, moisture, fumes.
- Heavy duty, ball-bearing HOIST SERVICE motors
- Automatic lowering brake.
- Ball or roller bearings at vital points.
- Improved plow-steel cable.
- 100% positive automatic stop.
- Indoor (open) and Outdoor (glazed) cabs.
- Efficient spur-gear drive . . . and

LO-HED COSTS LESS PER LIFT

OTHER A-E-CO PRODUCTS: Taylor Stokers, Marine Deck Auxiliaries, Hele-Shaw Fluid Power.

A-E-CO Lo-Hed HOISTS

AMERICAN ENGINEERING COMPANY

2484 ARAMINGO AVENUE, PHILADELPHIA, PA.

MATERIALS HANDLING

Brass Foundry

(*Concluded from Page* 49)

Melting room is separate. The furnaces are in a line and the piping is confined in a large duct, assuring a fresh supply of air at all times. Exhaust fans were installed to provide a maximum of 50,000 cubic feet of air per minute. They have completely eliminated zinc chills and the other maladies formerly associated with melting rooms.

To further habits of cleanliness in the foundry and to provide a greater incentive to good workmanship, a vacuum cleaning system has been installed which totally eliminates dust and dirt formerly caused by sweeping and cleaning the found-

ry. The result is a cleaner, better appearing shop.

Throughout the planning of our revised foundry layout, the chief motive was to eliminate the unnecessary handling of material and to provide a healthful, safe foundry in which to work. Aside from health and safety, we have been rewarded by more than doubling the capacity of the foundry in the same area, reducing the number of complaints from molders to almost nothing, and providing a more efficient and satisfied organization.

•

Mirrors of Motordom

(*Concluded from Page* 30)

rubber spring shackles, saddle spring type seat cushions and adjustable front seats introduced.

1927 Gearshift standard on all cars.

1928 Safetv glass introduced as standard equipment.

1929 Automobile radio introduced.

1931 Vacuum spark control used.

1932 Drop center rims replaced "detachable."

1933 First steel top used on some cars. Built-in trunks appear.

1934 Synchronized front and rear springs introduced.

1935 Bodies all of steel universal. Steering post gearshift on one make.

1936 House trailers sought spotlight.

1937 Built-in windshield defroster ducts, floors lower, doors taller, batteries placed under hood.

1938 Improved windshield vision, catwalk grilles, independently sprung front wheels, airfoam seat cushions attract interest.

1939 Steering column gearshift becomes popular.

1940 Sealed-beam headlights universally approved.

■ THROUGH H. H. Bennett of the all-seeing Ford service department, it was announced Wednesday some 40 Russian engineers and their interpreters who had been residing at the Ford Motor Co. plant and had offices in the Schaefer building nearby, had been ejected from the plant. They were accused of attempting to bribe Ford officials to send technical information to Russia and of promoting communism among groups of Ford workers.

The Russian representatives of Amtorg Trading Corp., New York, have been in Detroit for nine years, but lately have been excluded from many of the large motor plants here, with the exception of Ford where they had passes giving them access to nearly all departments. Opinions had been expressed privately by some Ford engineers that they were not concerned about the Russians obtaining information and sending it home because any technical details they did manage to obtain would be three or four years old by the time they were received in Russia and put to use; hence it would not prove injurious to Ford. Activities of the Russians in preaching communism among Ford workmen were well known, even as long ago as the famous "overpass" riot when UAW representatives were ejected from Ford property. The sudden exodus last week was described by Bennett as prompted more by disclosure of bribery attempts on Ford officials.

Sales of Buick cars at the New York auto show last week outran last year by two to one, while dealers throughout the country as of Oct. 10, had on hand 28,554 unfilled orders, highest in the history of the country. Domestic retail deliveries in the first ten days of the month totaled 6768 units, compared with 5197 in the same period last year.

New Black-Plating Process Has High Rate of Deposition

■ A NEW black-plating process developed by E. I. du Pont de Nemours & Co., Wilmington, Del., is claimed to produce lustrous, deep-black electrodeposits that have no color refraction under an intense beam of light in a dark room. Known as the "Moly-Black" molybdenum-nickel electroplating process, the plating operation is based on a combination of molybdenum and nickel which is available in plating salt form and operates at low current densities 20 times more rapidly than nickel.

Its high throwing power produces deposits of uniform thickness even in deep irregular recesses. Deposits are of a low density, with a maximum thickness of about 0.002-inch and contain 45 per cent molybdenum, 10 per cent nickel, the remainder being mainly oxygen.

A coating 0.001-inch thick, it is claimed, can be applied in 10 minutes.

Projected uses cover a wide range and include plating of electrical accessories, instrument dials, office furniture, lighting fixtures, flashlight cases, automotive hardware and trim, hinges, and furniture hardware.

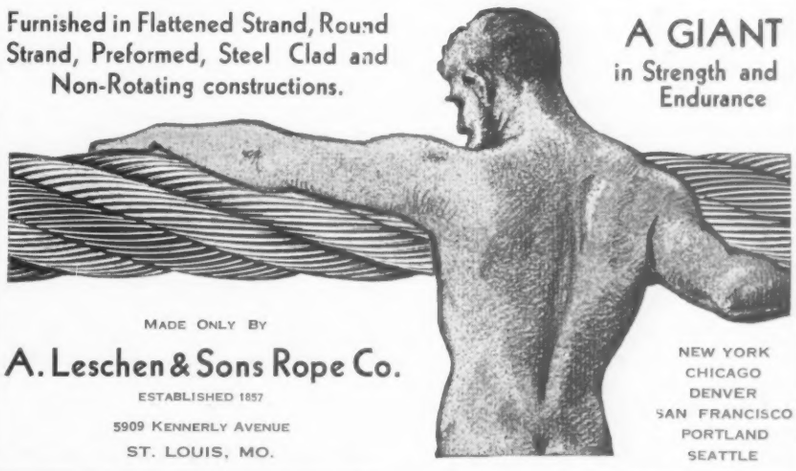
An important application is seen in optical instruments such as microscopes, cameras and telescopes where a true-black finish is necessary. The plating process is applicable to bases of zinc; aluminum; cadmium electroplated on brass, iron or steel; tin, either electroplated or hot-dipped; nickel; and steel or iron. An unusual characteristic of the new black process is its ability to plate directly over aluminum prepared only by cleaning in an alkaline bath.

The coating works well over any of the suggested base metals, particularly as a decorative finish for indoor use. For outdoor use, the black plate should be deposited over an undercoating of cadmium, after which it should be lacquered.

"HERCULES"
RED-STRAND
REG. U. S. PAT. OFF.
WIRE ROPE

Furnished in Flattened Strand, Round Strand, Preformed, Steel Clad and Non-Rotating constructions.

A GIANT in Strength and Endurance



MADE ONLY BY
A. Leschen & Sons Rope Co.
ESTABLISHED 1857
5909 KENNERLY AVENUE
ST. LOUIS, MO.

NEW YORK
CHICAGO
DENVER
SAN FRANCISCO
PORTLAND
SEATTLE

Tin-Coated Electrodes

(*Concluded from Page* 53)

tip then is moved along at an approximate rate of 1 inch for each 5 seconds, so a new portion of the coated rod is continuously being brought into contact with the heat of the carbon arc.

A microscopic examination of the protective coating which replaces the volatilized zinc coating adjacent to the weld, discloses that it seems to be made of successive longitudinal layers of pure tin with finally an alloy layer of tin and zinc. The zinc content increases with distance from the weld proper. Total width of this entire area, however, if the above procedure is correctly followed, will only be from 1/32 to ⅛-inch on each side of the weld on 16-gage galvanized sheets.

Experiments were made to determine the best type of joint for the Gaylord process. Several were tried including a plain butt joint and a straight lap joint. However, the offset lap joint appears to offer the best conditions for this process. The offset lap joint gives an opportunity for laying the filler rod in a fillet as shown in Fig. 2. The bottom portion of the lap joint also helps to remove the heat of welding so there is little or no damage to the galvanizing on the side of the sheet opposite the weld.

Numerous tests in a pull-test machine indicate this type of joint has approximately 90 per cent of the strength of the galvanized sheet, with an average ultimate tensile strength of 51,000 pounds per square inch.

Design Changes Possible

This method of joining galvanized sheets has made possible important changes in the design of galvanized iron equipment. For example, the fact that the joint has a strength of 51,000 pounds per square inch makes it possible for the air-conditioning engineer to figure on fewer hangers and a consequent saving in installation costs. This same strength enables air ducts and other air conditioning equipment to be built of a size to allow for frequent cleaning by actually sending men through long runs of air ducts. Clean ducts permit considerable improvement in the quality of our products.

The accompanying illustrations indicate the types of equipment now built using this process: Fig. 4 shows the galvanized sheet welded by depositing weld metal in fillets of jog-lap joint. Reverse side of joint is first tack welded.

Fig. 6 is an interchanger weighing 8 tons and constructed entirely of galvanized sheets and plates welded by this process. Special air-duct connections are shown in Fig. 5. Laboratory equipment of galvanized sheet welded construction is detailed in Fig. 3.

The experience of Eastman Kodak Co. indicates that in addition to providing a joint which is much stronger and fully corrosion resistant to damp atmospheres, the use of the new process also results in lowered costs on the high grade air conditioning equipment installed in our various plants. We find total installation costs reduced about one-third compared to cost of conventional rivet-solder joint. Savings are greatest in case of long runs of air ducts which normally require considerable expense in hangers or other reinforcement.

♦

Enamelers' Forum

(*Concluded from Page* 71)

its, most essential for reasonable cost.

Mr. Weierich referred to the difficulty in matching colors, as an almost perfect match is essential in structural porcelain because of the large areas encountered. To meet this definite need, a reflectometer is being developed by bureau of standards. This is expected to be a valuable aid in eliminating human and lighting errors on such work.

In a most interesting presentation, W. S. Arrasmith of Wischmeyer, Arrasmith & Elswick, architects, Louisville, Ky., pointed out the dire need for education of both architect and user as to the possibilities, best application methods and similar facts concerning porcelain enamel. He believes its best field at present is in small structures and inside of buildings. He emphasized the great necessity for doing research work to obtain flatter sheets, to eliminate waviness and to develop better application methods. He emphasized the need for erection by the producer of the enamel for best results, this being a weak point in present structural porcelain work.

Model specifications for architectural porcelain enameling work must be prepared immediately for inclusion in building codes, according to J. H. Wilson, American Rolling Mill Co., Middletown, O.

As suggested by Mr. Wilson, these specifications should not be too much of a descriptive nature but should be of a functional character such as covering what loads should be handled by various thickness and sections of pieces. Other items that might be included in standard specifications would be joint and calking details, thickness of enamel coatings, shape of pieces, etc. He recommended immediate preparation of a tentative set of specifications to be sent out for comment and to be followed by final draft and a vote by mail at once.

Mr. Wilson pointed out the need for accelerated tests on entire wall sections to test joints, supports, etc. It was stated that bureau of standards already has samples and has begun erection of panels throughout the country to give information on what happens back of the panels. It is expected this long-range study will develop significant information on this important factor as there is no information available at present on this.

Sees Sales of Industrial Gas Rising 10 Per Cent

■ Outlook for sales of gas for industrial uses in the current year is extremely bright, an increase of 10 per cent over 1938 being indicated. This was the opinion expressed by Frank H. Trembly Jr., Philadelphia Gas Works Co., Philadelphia, at the twenty-first annual convention of the American Gas association in New York, Oct. 10-12.

The speaker pointed out the number of technical factors involved and stressed their importance in distribution of gas for industrial needs. No section of the industry extends into a greater number of fields. Mr. Trembly praised the many and various installations, large and small, at the New York World's Fair.

C. E. Bennett, president, Manufacturers' Light & Heat Co., Pittsburgh, assailed a growing tendency toward regulation of prices for industrial gas. Revenues from industrial gas have made possible present low domestic gas rates, he declared. The industry, he said, must accurately determine cost of industrial gas production.

Reporting for the industrial and commercial air conditioning committee, Charles R. Bellamy, Columbia Gas & Electric Corp., declared the air conditioning industry had not attained the phenomenal growth predicted a few years back. Nevertheless, growth has been steady, from a gross of $10,000,000 in 1931 to better than $65,000,000 annually.

Complaints increase with general air conditioning because of overcooling, Mr. Bellamy reported. The committee feels that the air conditioning industry should recognize the seriousness of these public complaints and attempt to eliminate the cause before irreparable damage is done.

An extensive report of the gas convention appeared in STEEL for Oct. 16, p. 78.

Capacity Taxed by Widespread Demand

Ingot Output Rises to Largest Tonnage on Record

MARKET IN TABLOID ★

Demand
Brisk; no letup appears in pressure for delivery.

Prices
Strong; first quarter levels not established; scrap off.

Production
Up 1½ points to 91 per cent.

■ STEEL producers see no letup in pressure from customers for delivery, and additional orders rapidly are filling what little available capacity remains on fourth quarter schedules. In addition, first quarter bookings are more active, apparently on the belief price advances that period will be smaller than expected previously.

Meanwhile, ingot production and mill schedules are being pushed upward. The national rate last week rose 1½ points to 91 per cent, compared with 51½ per cent a year ago. While recent operations on a percentage basis have been exceeded on numerous occasions in the past—including the spring of 1937—tonnage output lately has been larger than for any other week in history.

Additional plant facilities are being readied for service. In the Pittsburgh district alone five more blast furnaces are being relined or repaired. Practically all of the American fleet of Great Lakes bulk freighters available for operation are engaged in ore movement. As of mid-October 286 vessels were attempting to build up ore stocks at blast furnaces and lower lake ports as much as possible before the end of the navigation season. Despite the recent heavy movement, stocks on hand Oct. 1 were 2,000,000 tons smaller than a year ago.

Demands of consumers for steel shipments reflect the low level of inventories prior to the recent abrupt rise in general industrial activity. Part of the orders placed since Sept. 1 represents coverage beyond this quarter. At the same time, increased consumption necessitates larger tonnages not only for immediate needs but also to bring inventories to a level commensurate with improved operations.

Slowness with which automobile assemblies are increasing has had little effect on steel shipments, because of brisk demand elsewhere. Labor trouble, which is curtailing the industry's output about 25 per cent, caused production last week to drop 1746 units to 74,114 cars and trucks. A gain of 5600 by General Motors was more than offset by the almost complete shutdown of Chrysler divisions.

Railroads continue one of the most active supporters of steel markets. Last week saw the placing of 5000 freight cars, 37 locomotives and 124,500 tons of rails. Additional large purchases are pending. Principal rail order was 87,500 tons for the Union Pacific which also closed on 20,500 tons of accessories.

Two more merchant ships, requiring 10,000 tons of steel for hull and superstructure, have been placed by the maritime commission. These bring the commission's orders so far this year to 97 vessels, involving 385,000 tons of steel.

Export business in steel products continues overshadowed by domestic demand, only relatively small lots being accepted for foreign shipment. Export prices are strong, with plates advanced an additional $5 a ton and black sheets up $3.

Structural and reinforcing bar business continues active despite some moderation in number of large projects appearing for bids. Inquiries include 7000 tons of shapes for various railroad bridges and 4950 tons for a Passaic river bridge, New Jersey. A Chicago filtration plant will take 19,000 tons of bars.

Tin plate production rose 3 more points last week to 95 per cent, with little additional capacity available. A leading canmaker plans a new type of contract that incorporates provisions for rebates to customers in the event the former's tin plate costs decline from the figure to be established the first of each year.

Scrap markets are quieter following recent active demand. Prices have settled further, STEEL'S composite being off 83 cents last week to $21. However, quotations in some districts have tended to become firmer at the new levels. The composite now is $1.16 below the early-October peak but is $7 higher than a year ago.

Steelmaking gains last week were widely scattered. Pittsburgh and Chicago both reached 89 per cent, increases of 3 and 1½ points, respectively. Youngstown held at 94 per cent, but eastern Pennsylvania was up 4 points to 72. Other upturns included 10 points to 100 per cent in New England, 2 points to 88 at Cincinnati and 2½ points to 77 at St. Louis. Cleveland and Birmingham both continued at 90, with Wheeling unchanged at 93. Shutdowns for furnace repairs lowered the Buffalo rate 2½ points to 86 and Detroit operations 2 points to 96.

COMPOSITE MARKET AVERAGES

	Oct. 21	Oct. 14	Oct. 7	One Month Ago Sept., 1939	Three Months Ago July, 1939	One Year Ago Oct., 1938	Five Years Ago Oct., 1934
Iron and Steel	$37.56	$37.62	$37.74	$36.67	$35.82	$36.48	$32.10
Finished Steel	55.90	55.90	55.90	55.60	55.62	57.04	54.00
Steelworks Scrap..	21.00	21.83	22.16	17.97	14.72	14.00	9.40

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Oct. 21, 1939	Sept. 1939	July 1939	Oct. 1938
Steel bars, Pittsburgh	2.15c	2.15c	2.15c	2.25c
Steel bars, Chicago	2.15	2.15	2.15	2.25
Steel bars, Philadelphia	2.47	2.47	2.47	2.57
Iron bars, Terre Haute, Ind.	2.15	2.05	2.05	2.15
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes, Philadelphia	2.215	2.215	2.215	2.215
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.10	2.10	2.10	2.10
Plates, Philadelphia	2.15	2.15	2.15	2.15
Plates, Chicago	2.10	2.10	2.10	2.10
Sheets, hot-rolled, Pittsburgh	2.00	2.00	2.00	2.10
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.05	3.15
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.50
Sheets, hot-rolled, Gary	2.00	2.00	2.00	2.10
Sheets, cold-rolled, Gary	3.05	3.05	3.05	3.15
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.50
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.60
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.55	2.40	2.40	2.45

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods, No. 5 to ⅜-inch, Pitts.	43.00	43.00	43.00	43.00

Pig Iron

	Oct. 21, 1939	Sept. 1939	July 1939	Oct. 1938
Bessemer, del. Pittsburgh	$24.34	$23.35	$22.34	$22.34
Basic, Valley	22.50	21.50	20.50	20.50
Basic, eastern, del. Philadelphia	24.34	23.54	22.34	22.34
No. 2 foundry, Pittsburgh	24.21	23.20	22.21	22.21
No. 2 foundry, Chicago	23.00	22.20	21.00	21.00
Southern No. 2, Birmingham	19.38	18.58	17.38	17.38
Southern No. 2 del. Cincinnati	22.89	22.09	20.89	20.89
No. 2X, del. Phila. (differ. av.)	25.215	24.415	23.215	23.215
Malleable, Valley	23.00	22.00	21.00	21.00
Malleable, Chicago	23.00	22.20	21.00	21.00
Lake Sup., charcoal, del. Chicago	30.34	29.54	28.34	28.34
Gray forge, del. Pittsburgh	23.17	22.15	21.17	21.17
Ferromanganese, del. Pittsburgh	105.33	95.35	85.33	97.77

Scrap

Heavy melting steel, Pittsburgh	$22.75	$18.75	$15.55	$14.95
Heavy melt. steel, No. 2, E. Pa.	19.75	17.10	13.55	12.95
Heavy melting steel, Chicago	18.75	16.25	13.55	13.05
Rails for rolling, Chicago	21.75	19.65	17.75	16.25
Railroad steel specialties, Chicago	21.75	18.00	15.50	15.55

Coke

Connellsville, furnace, ovens	$5.00	$3.75	$3.75	$3.75
Connellsville, foundry, ovens	6.00	5.00	5.00	5.00
Chicago, by-product fdry., del.	10.50	10.50	10.50	10.50

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.00c
Chicago, Gary	2.00c
Cleveland	2.00c
Detroit, del.	2.10c
Buffalo	2.00c
Sparrows Point, Md.	2.00c
New York, del.	2.24c
Philadelphia, del.	2.17c
Granite City, Ill.	2.10c
Middletown, O.	2.00c
Youngstown, O.	2.00c
Birmingham	2.00c
Pacific Coast points	2.50c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast points	3.65c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.50c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	24.00	35.00
Cold stp.	22.00	22.50	32.00	52.00

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c-2.54c
Philadelphia, del.	2.15c-2.40c
Boston, delivered	2.46c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, Pa.	2.35c
Sparrows Point, Md.	2.10c
Claymont, Del.	2.10c-2.35c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Pittsburgh	3.35c
Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(*Base, 20 tons or over*)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2.15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, delivered	2.52c
New York, del.	2.49c
Gulf ports	2.50c
Pacific Coast points	2.75c

Rail Steel

(*Base, 5 tons or over*)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Detroit, delivered	2.25c
Cleveland	2.15c

Buffalo	2.15c
Birmingham	2.15c
Gulf ports	2.50c
Pacific Coast points	2.75c

Iron

Chicago, Terre Haute	2.15c
Philadelphia	2.37c
Pittsburgh, refined	3.50-8.00c

Reinforcing

*New Billet Bars, Base**

Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts.	2.15c
Gulf ports	2.50c
Pacific Coast ports	2.60c

*Rail Steel Bars, Base**

Pittsburgh, Gary Chicago, Buffalo, Cleveland, Birm.	2.15c
Gulf ports	2.50c
Pacific Coast ports	2.60c

**Base prices 20 cents less per 100 lbs. in lots of 20 tons or over of one size, in lengths of 30 feet or over, for shipment at one time to one destination.*

Wire Products

Pitts-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard and cement coated wire nails	$2.55
(Per pound)	
Polished fence staples	2.55c
Galv. barbed wire, standard 12½ gage two-point hog, 80-rod spool $2.88; two-point cattle, 80-rod spool	$2.70
Annealed fence wire	2.90c
Galv. fence wire	3.30c
Woven wire fencing (base C. L. column)	67.00
Single loop bale tie, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut Nails

Carload, Pittsburgh $3.70

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.65c	3.35c
Chicago	2.65c	3.35c
Gary, Ind.	2.65c	3.35c
Detroit	2.70c	*3.45c
Cleveland	2.65c	3.35c
Buffalo	2.65c	3.35c

* Delivered.

Alloy Bars (Hot)

(Base, 20 tons or over)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.70c
Detroit, delivered	2.80c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Strip and Hoops

(Base, hot strip, 1 ton or over; cold, 3 tons or over)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.00c
Detroit, del.	2.10c
Philadelphia, del.	2.32c
New York, del.	2.36c
Pacific Coast points	2.60c
Cooperage hoop, Youngs., Pitts.; Chicago, Birm.	2.10c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.80c
Chicago	2.90c
Detroit, del.	2.90c
Worcester, Mass.	3.00c

Carbon	Cleve., Pitts.
0.26—0.50	2.80c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass. $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	2.95c
Detroit, del.	3.05c
Worcester, Mass.	3.35c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

F.o.b. Pittsburgh, Cleveland, Birmingham, Chicago. Discounts for carloads additional 5%, for full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1⅛ and larger	64 off
Tire bolts	52.5 off

Stove Bolts

In packages with nuts separate 72.5 off; with nuts attached add 15%; bulk 83.5 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Step bolts	60 off
Plow bolts	68.5 off

Nuts

Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	67	70
⅞-1-inch	64	65
1⅛ and larger	62	62

Hexagon Cap Screws

Upset, 1-in., smaller	70.0 off

Square Head Set Screws

Upset, 1-in., smaller	75.0 off
Headless set screws	64.0 off

Piling

Pitts., Chgo., Buffalo	2.40c
Gulf ports	2.85c
Pacific coast ports	2.90c

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila., to jobbers	
and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

Steel

In.	Blk.	Galv.
½	63½	54
¾	66½	58
1—3	68½	60½

Iron

¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½
2, lap weld	60
2½ to 3, lap weld	63
3½ to 6, lap weld	65
7 and 8, lap weld	64
10-inch lap weld	63½
12-inch, lap weld	62½

Iron

	Blk.	Galv.
¾ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½"O.D.	13	$ 9.72	$23.71
1¾"O.D.	13	11.06	22.93
2" O.D.	13	12.38	19.35
2¼"O.D.	13	13.79	21.68
2¼"O.D.	12	15.16	.....
2½"O.D.	12	16.58	26.57
2¾"O.D.	12	17.54	29.00
3" O.D.	12	18.35	31.36
3½"O.D.	11	23.15	39.81
4" O.D.	10	28.66	49.90
5" O.D.	9	44.25	73.93
6" O.D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1 "O.D.	13	$ 7.82	$ 9.01
1¼"O.D.	13	9.26	10.67
1½"O.D.	13	10.23	11.79
1¾"O.D.	13	11.64	13.42
2" O.D.	13	13.04	15.03
2¼"O.D.	13	14.54	16.76
2¼"O.D.	12	16.01	18.45
2½"O.D.	12	17.54	20.21
2¾"O.D.	12	18.59	21.42
3" O.D.	12	19.50	22.48
3½"O.D.	11	24.62	28.37
4" O.D.	10	30.54	35.20
4½"O.D.	10	37.35	43.04
5" O.D.	9	46.87	54.01
6" O.D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$45.00-46.00
4-in., Birmingham	48.00-49.00
4-in., Chicago	56.80-57.80
6-in. & over, Chicago	53.80-54.80
6-in. & over, east fdy.	49.00
Do., 4-in.	52.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm.	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅝-inch incl.	43.00
Do., over ⅝ to ¾-in.incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Youngstown, Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$5.00- 5.50
Connellsville, fdry.	5.75 -6.25
Connell. prem. fdry.	6.00- 6.50
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 6.50
Wise county fur.	5.00- 5.25

By-Product Foundry

Newark, N. J., del.	11.38-11.85
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Terre Haute, del.	10.00
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	11.15

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	6.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$24.00	$24.50	$23.50	$25.00
Birdsboro, Pa.	24.00	24.50	23.50	25.00
Birmingham, Ala.§	19.38	....	18.38	24.00
Buffalo	23.00	23.50	22.00	24.00
Chicago	23.00	23.00	22.50	23.50
Cleveland	23.00	23.00	22.50	23.50
Detroit	23.00	23.00	22.50	23.50
Duluth	23.50	23.50	.....	24.00
Erie, Pa.	23.00	23.50	22.50	24.00
Everett, Mass.	24.00	24.50	23.50	25.00
Granite City, Ill.	23.00	23.00	22.50	23.50
Hamilton, O.	23.00	23.00	22.50	.....
Neville Island, Pa.	23.00	23.00	22.50	23.50
Provo, Utah	21.00	.....	.....	.....
Sharpsville, Pa.	23.00	23.00	22.50	23.50
Sparrow's Point, Md.	24.00	.....	23.50	.....
Swedeland, Pa.	24.00	24.50	23.50	25.00
Toledo, O.	23.00	23.00	22.50	23.50
Youngstown, O.	23.00	23.00	22.50	23.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:

Akron, O., from Cleveland	24.39	24.39	23.89	24.89
Baltimore from Birmingham	24.78	.....	23.66	.....
Boston from Birmingham	24.12	.....	.....	.....
Boston from Everett, Mass.	24.50	25.00	24.00	25.50
Boston from Buffalo	24.50	25.00	24.00	25.50
Brooklyn, N. Y., from Bethlehem	26.50	27.00	.....	.....
Canton, O., from Cleveland	24.39	24.39	23.89	24.89
Chicago from Birmingham	†23.22	.....	.....	.....
Cincinnati from Hamilton, O.	23.24	24.11	23.61	.....
Cincinnati from Birmingham	23.06	.....	22.06	.....
Cleveland from Birmingham	23.32	.....	22.82	.....
Mansfield, O., from Toledo, O.	24.94	24.94	24.44	24.44
Milwaukee from Chicago	24.10	24.10	23.60	24.60
Muskegon, Mich., from Chicago, Toledo or Detroit	26.19	26.19	25.69	26.69
Newark, N. J., from Birmingham	25.15	.....	.....	.....
Newark, N. J., from Bethlehem	25.53	26.03	.....	.....
Philadelphia from Birmingham	24.46	...	23.96	.....
Philadelphia from Swedeland, Pa.	24.84	25.34	24.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	25.45	25.45	24.95	24.95
St. Louis, northern	23.50	23.50	23.00	....
St. Louis from Birmingham	†23.12	....	22.62	....
St. Paul from Duluth	25.63	25.63	....	26.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Buffalo, N. Y., $28.50, base; $29.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$22.50	Lake Superior fur.	$27.00
Pitts. dist. fur.	22.50	do., del. Chicago	30.34
		Lyles, Tenn.	26.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $27.50; 6.51-7—$28.00; 7-7.50—$28.50; 7.51-8—$29.00; 8-8.50—$29.50; 8.51-9—$30.00; 9-9.50—$30.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	55.10
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar

Washed gravel, duty pd., tide, net ton	$25.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	20.00
Do. barge	20.00
No. 2 lump	21.00-22.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $100.00
Do., del. Pittsburgh 105.33

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 32.00
Do., 26-28%, Palmerton 39.50

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicomanganese, 2½ c. 103.00
2% carbon, 108.00; 1%, 118.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 2.25

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c
67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.75c
1% carb.	17.50c	18.25c	18.75c
0.10% carb.	19.50c	20.25c	20.75c
0.20% carb.	18.50c	19.25c	19.75c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do., less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00
15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.75
Do, smaller lots 2.85

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do., 2% 12.50c
Spot ¼c higher

Silicon Briquets, contract carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 5.00c
Ton lots 5.50c
Less-ton lots 5.75c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

Molybdenum Oxide Briquets, 48-52% molybdenum, per pound contained, f.o.b. producers' plant 80.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24	Cold Rolled Strip	Cold Drawn Bars: Carbon	Cold Drawn Bars: SAE 2300	Cold Drawn Bars: SAE 3100
Boston	3.98	4.06	5.06	3.85	3.85	5.66	3.71	4.78	4.86	3.46	4.13	8.63	7.23
New York (Met.)	3.84	3.96	3.96	3.76	3.75	5.56	3.58	4.60	4.89	3.51	4.09	8.59	7.16
Philadelphia	3.85	3.85	4.35	3.55	3.55	5.25	3.55	4.55	4.68	3.51	4.06	8.56	7.16
Baltimore	3.95	4.05	4.45	3.70	3.70	5.25	3.55	4.90	5.05	....	4.05	....	....
Norfolk, Va.	4.15	4.25	....	3.90	3.90	5.45	3.75	....	5.40	....	4.15	....	....
Buffalo	**3.35**	**3.82**	**3.82**	**3.62**	**3.40**	6.40	4.20	6.30	5.00	4.45	6.15	10.40	9.55
Pittsburgh	**3.35**	**3.60**	**3.60**	**3.40**	**3.40**	5.00	3.35	....	4.75	3.35	3.65	8.35	6.95
Cleveland	**3.25**	**3.50**	**3.50**	**3.40**	**3.58**	5.18	3.35	4.55	4.62	3.20	3.75	8.15	6.75
Detroit	3.58	3.68	3.68	3.75	3.80	5.42	3.43	4.50	4.84	3.40	3.80	8.45	7.05
Cincinnati	3.60	3.67	3.67	3.65	3.68	5.28	3.42	....	4.57	3.45	4.00	8.50	7.10
Chicago	3.50	3.60	3.60	3.55	3.55	5.15	3.35	4.30	4.85	3.50	3.75	8.15	6.75
Twin Cities	3.75	3.85	3.85	3.80	3.80	5.40	3.60	4.95	4.50	3.83	4.34	8.84	7.44
Milwaukee	**3.63**	**3.73**	**3.73**	**3.68**	**3.68**	5.28	3.48	4.43	4.73	....	3.88	8.38	6.98
St. Louis	**3.62**	**3.72**	**3.72**	**3.47**	**3.47**	5.07	3.38	4.32	4.52	3.61	4.02	8.52	7.12
Kansas City	**4.05**	**4.15**	**4.15**	**4.00**	**4.00**	5.60	3.90	....	5.00	....	4.30	....	....
Memphis	3.90	4.00	4.00	3.95	3.95	5.71	3.75	....	5.00	....	4.31	....	....
Chattanooga	3.80	3.90	3.90	3.85	3.85	5.80	3.65	....	4.40	....	4.39	....	....
Tulsa, Okla.	4.44	4.54	4.54	4.33	4.33	5.93	4.24	....	5.19	....	4.69	....	....
Birmingham	3.50	3.60	3.60	3.55	3.55	5.88	3.35	....	4.85	....	4.43	....	....
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60	5.00	5.10	....	....
Houston, Tex.	4.05	6.20	6.20	4.05	4.05	5.75	4.20	....	5.25	....	....	....	....
*Seattle	4.00	3.85	5.20	3.40	3.50	5.75	3.70	6.50	4.75	....	5.75	....	....
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75	....	5.85	....	....
Los Angeles	4.15	4.65	6.35	4.00	4.00	6.40	3.75	6.40	5.15	....	6.15	10.65	9.80
San Francisco	4.00	4.35	6.00	4.00	4.00	5.60	3.75	6.40	5.15	....	6.80	10.65	9.80

	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series
Boston	4.18	7.50	6.05	5.80	7.90
New York (Met.)	4.04	7.35	5.90	5.65	....
Philadelphia	4.10	7.31	5.86	5.61	7.71
Baltimore	4.10	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.10	5.65	5.40	7.50
Pittsburgh	3.40	7.35	5.95	5.50	7.60
Cleveland	3.30	7.30	5.85	5.85	7.70
Detroit	3.63	4.42	5.97	5.72	7.19
Cincinnati	3.65	7.44	5.99	5.74	7.84
Chicago	3.70	7.10	5.65	5.40	7.50
Twin Cities	3.95	7.45	6.00	6.09	8.19
Milwaukee	3.78	7.33	5.88	5.63	7.73
St. Louis	3.82	7.47	6.02	5.77	7.87
Seattle	5.85	....	8.00	7.85	8.65
Portland, Oreg.	5.70	8.85	8.00	7.85	8.65
Los Angeles	4.80	9.40	8.55	8.40	9.05
San Francisco	5.00	9.65	8.80	8.65	9.30

BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds, except 0-1999 pounds (hot rolled sheets only) in New York; 300-1999 pounds in Los Angeles; 0-299 pounds (hoops only) in San Francisco; 300-4999 pounds in Portland, Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in Birmingham.

Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York and St. Louis; 450-3749 pounds in Boston; 500-1499 pounds in Buffalo; 1000-1999 pounds in Philadelphia; 300-4999 pounds in San Francisco and Portland; any quantity in Twin Cities.

Galvanized Sheets: Base, 0-1499 pounds in New York, Tulsa; 150-1499 pounds in Cleveland, Milwaukee, Pittsburgh, Baltimore, Norfolk; 150-1049 pounds in Los Angeles; 300-4999 pounds in Portland, San Francisco; 450-3749 pounds in Boston; 500-1499 pounds in Birmingham, Buffalo, Chicago, Cincinnati, Detroit, St. Louis; 1500 pounds and over in Chattanooga, Philadelphia; any quantity in Twin Cities.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1500 pounds and over on carbon bars, 1000 pounds and over on alloy bars.

SAE Hot Rolled Alloy Bars: Base, 1000 or 2000 pounds and over, except 0-4999 pounds in San Francisco; 0-1999 in Portland.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Oct. 19

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channel or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$20.05 5 0 0	$18.32	2 3 0
Basic bessemer	....	19.59	2 6 0
Hematite, Phos. .03-.05	21.05 5 5 0	.....	.....
Billets	$29.57 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	45.61 11 7 6	46.86	5 10 0
Standard rails	$38.09 9 10 0	$48.99	5 15 0
Merchant bars	1.97c 11 0 0	2.47c	6 7 8
Structural shapes	1.79c 10 0 0	2.35c to 2.47c	6 3 6 to 6 7 8
Plates, †¼ in. or 5 mm.	1.96c 10 18 9	2.81c	7 8 0
Sheets, black, 24 gage or 0.5 mm.	2.33c 13 0 0	3.23c	8 10 0°
Sheets, gal., 24 ga., corr.	2.82c 15 15 0	3.52c	9 5 0
Bands and strips	2.19c 12 5 0	2.10c to 2.33c	1,400 to 1,550*
Plain wire, base	3.49c 19 10 0	3.04c	8 0 0
Galvanized wire, base	4.16c 23 5 0	3.61c to 3.66c	9 10 0 to 9 12 6
Wire nails, base	....	3.52c	9 5 0
Tin plate, box 108 lbs.	$ 5.21 1 6 0	.....	.....

British ferromanganese $100.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich §§Mark
Fdy. pig iron, Si. 2.5	$19.85	4 19 0(a)	$15.50	679.30	$21.00	625	$25.20	63
Basic bess. pig iron	18.55	4 12 6(a)	.....	.....	.....	...	27.80	(b)69.50
Furnace coke	4.61	1 4 2	5.13	225	6.79	202	7.60	19
Billets	29.57	7 7 6	23.46	1,029	28.90	860	38.60	96.50
Standard rails	1.70c	9 10 0	1.41c	1,405	2.05c	1,375	2.38c	132
Merchant bars	2.08c	11 12 0††	1.30c	1,304	1.65c	1,100	1.98c	110
Structural shapes	1.86c	10 8 0††	1.27c	1,268	1.65c	1,100	1.93c	107
Plates, †¼-in. or 5 mm.	1.96c	10 19 3††	1.65c	1,630	2.05c	1,375	2.29c	127
Sheets, black	2.64c	14 15 0§	1.96c	1,958‡	2.36c	1,575‡	2.59c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.02c	17 5 0	2.85c	2,850	4.05c	2,700	6.66c	370
Plain wire	3.49c	19 10 0	2.00c	2,000	2.48c	1,650	3.11c	173
Bands and strips	2.21c	12 7 0††	1.44c	1,444	1.95c	1,300	2.29c	127

†British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price.
British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel.
(a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed.
††Rebate of 15s on certain conditions. *†Belgian francs.
**Gold pound sterling not quoted. §§Last prices, no current quotations.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	17.00
Bos. dock No. 1 exp.	17.50-18.00
New Eng. del. No. 1	18.00-19.00
Buffalo, No. 1	21.00-21.50
Buffalo, No. 2	19.00-19.50
Chicago, No. 1	18.50-19.00
Chicago, auto, no alloy	17.00-17.50
Chicago, No. 2 auto	15.50-16.00
Cincinnati dealers	16.50-17.00
Cleveland, No. 1	19.50-20.00
Cleveland, No. 2	18.50-19.00
Detroit, No. 1	†16.00-16.50
Detroit, No. 2	†15.00-15.50
Eastern Pa., No. 1	21.50-22.00
Eastern Pa., No. 2	19.50-20.00
Federal, Ill.	16.00-16.50
Granite City, R. R.	17.00-17.50
Granite City, No. 2	15.75-16.25
Los Angeles, No. 1	12.50-13.00
Los Angeles, No. 2	11.50-12.00
L. A., No. 1 f.a.s.	16.00-17.00
L. A., No. 2 f.a.s.	15.00-16.00
N. Y. dock No. 1 exp.	17.50
Pitts., No. 1 (R. R.)	24.50-25.00
Pittsburgh, No. 1	22.50-23.00
Pittsburgh, No. 2	21.00-21.50
St. Louis, R. R.	18.00-18.50
St. Louis, No. 2	15.75-16.00
San Francisco, No. 1	15.50-16.00
San Francisco, No. 2	14.50-15.00
Seattle, No. 1	14.50-15.50
Toronto, dlrs, No. 1.	10.00-10.50
Valleys, No. 1	21.00-21.50

COMPRESSED SHEETS

Buffalo, new	19.00-19.50
Chicago, factory	18.00-18.50
Chicago, dealers	16.50-17.00
Cincinnati, dealers	16.00-16.50
Cleveland	19.00-19.50
Detroit	†17.50-18.00
E. Pa., new mat	21.50-22.00
E. Pa., old mat.	18.50-19.00
Los Angeles	12.00-12.50
Pittsburgh	22.50-23.00
St. Louis	13.50-14.00
San Francisco	14.00-14.50
Valleys	20.50-21.00

BUNDLED SHEETS

Buffalo, No. 1	19.00-19.50
Buffalo, No. 2	16.50-17.00
Cleveland	15.00-15.50
Pittsburgh	21.00-21.50
St. Louis	12.00-12.50
Toronto, dealers	8.75- 9.25

SHEET CLIPPINGS, LOOSE

Chicago	14.00-14.50
Cincinnati dealers	11.50-12.00
Detroit	†12.50-13.00
St. Louis	11.00-11.50
Toronto, dealers	5.50- 6.00

BUSHELING

Buffalo, No. 1	19.00-19.50
Chicago, No. 1	17.00-17.50
Cincin., No. 1, deal.	12.00-12.50
Cincinnati, No. 2	5.50- 6.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1, new	†16.00-16.50
Valleys, new, No. 1.	18.50-19.00
Toronto, dealers	5.00- 5.50

MACHINE TURNINGS (Long)

Birmingham	7.50
Buffalo	13.00-13.50
Chicago	11.50-12.00
Cincinnati, dealers	7.50- 8.00
Cleveland, no alloy	11.50-12.00
Detroit	†9.50-10.00
Eastern Pa.	14.00-14.50
Los Angeles	4.00- 5.00
New York	†7.50- 8.00
Pittsburgh	14.00-14.50
St. Louis	9.00- 9.50
San Francisco	5.00
Toronto, dealers	5.50- 6.00
Valleys	12.50-13.00

SHOVELING TURNINGS

Buffalo	15.00-15.50
Cleveland	12.50-13.00
Chicago	11.50-12.00
Chicago, spcl, anal.	12.50-13.00
Detroit	†12.50-13.00
Pitts., alloy-free	17.50-18.00

BORINGS AND TURNINGS
For Blast Furnace Use

Boston district	†6.75- 7.50
Buffalo	11.50-12.00
Cincinnati, dealers	6.50- 7.00
Cleveland	12.00-13.00
Eastern Pa.	12.50-13.00
Detroit	†9.50-10.00
New York	†3.50- 4.00
Pittsburgh	13.00-13.50
Toronto, dealers	5.50- 6.00

AXLE TURNINGS

Buffalo	17.50-18.00
Boston district	†10.50-11.00
Chicago, elec. fur	18.00-18.50
East. Pa. elec. fur.	19.50-20.00
St. Louis	13.50-14.00
Toronto	6.00- 6.50

CAST IRON BORINGS

Birmingham	7.00- 7.50
Boston dist. chem.	†9.00- 9.50
Buffalo	11.50-12.00
Chicago	11.00-11.50
Cincinnati, dealers	6.50- 7.00
Cleveland	12.00-13.00
Detroit	†9.50-10.00
E. Pa., chemical	14.50-15.00
New York	†3.50- 4.00
St. Louis	9.00- 9.50
Toronto, dealers	5.00- 5.50

RAILROAD SPECIALTIES

Chicago	21.50-22.00

ANGLE BARS—STEEL

Chicago	21.00-21.50
St. Louis	21.00-22.00

SPRINGS

Buffalo	23.50-24.00
Chicago, coil	22.00-22.50
Chicago, leaf	21.00-21.50
Eastern Pa.	26.00-26.50
Pittsburgh	28.00-28.50
St. Louis	21.00-21.50

STEEL RAILS, SHORT

Birmingham	12.00-12.50
Buffalo	23.50-24.00
Chicago (3 ft.)	21.50-22.00
Chicago (2 ft.)	22.00-22.50
Cincinnati, dealers	23.50-24.00
Detroit	†24.50-25.00
Pitts., 3 ft. and less	28.00-28.50
St. Louis, 2 ft. & less	21.50-22.00

STEEL RAILS, SCRAP

Boston district	†15.50-16.00
Buffalo	21.00-21.50
Chicago	18.50-19.00
Cleveland	22.00-22.50
Pittsburgh	24.50-25.00
St. Louis	18.00-18.50
Seattle	18.00-18.50

FROGS, SWITCHES

Chicago	18.50-19.00
St. Louis, cut	18.00-18.50

ARCH BARS, TRANSOMS

St. Louis	20.00-20.50

PIPE AND FLUES

Chicago, net	13.50-14.00
Cincinnati, dealers	12.50-13.00

RAILROAD GRATE BARS

Buffalo	14.00-14.50
Chicago, net	12.75-13.25
Cincinnati, dealers	10.00-10.50
Eastern Pa.	17.50-18.00
New York	†13.00-13.50
St. Louis	13.00-13.50

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	21.50-22.00
St. Louis, No. 1	12.75-13.25
St. Louis, No. 2	17.50-18.00

FORGE FLASHINGS

Boston district	†11.75-12.00
Buffalo	19.00-19.50
Cleveland	18.50-19.00
Detroit	†15.00-15.50
Pittsburgh	21.00-21.50

FORGE SCRAP

Boston district	†7.00
Chicago, heavy	22.00-22.50

LOW PHOSPHORUS

Cleveland, crops	22.50-23.00
Eastern Pa., crops	25.50-26.00
Pitts., billet, bloom, slab crops	30.00-30.50

LOW PHOS. PUNCHINGS

Buffalo	22.00-22.50
Chicago	22.00-22.50
Cleveland	22.00-22.50
Eastern Pa.	26.00-26.50
Pittsburgh	25.50-26.00
Seattle	15.00
Detroit	†18.00-18.50

RAILS FOR ROLLING
5 feet and over

Birmingham	20.00
Boston	†17.00-17.50
Chicago	21.50-22.00
New York	†18.00-18.50
Eastern Pa.	24.00-24.50
St. Louis	20.00-20.50

STEEL CAR AXLES

Birmingham	20.00-21.00
Boston district	†18.50-19.00
Chicago, net	22.00-22.50
Eastern Pa.	25.00-25.50
St. Louis	22.00-22.50

LOCOMOTIVE TIRES

Chicago (cut)	21.00-21.50
St. Louis, No. 1	18.00-18.50

SHAFTING

Boston district	†18.50-19.00
New York	†18.00-18.50
Eastern Pa.	24.50-25.00
St. Louis, 1¼-3¾"	19.50-20.00

CAR WHEELS

Birmingham	13.50-14.00
Boston dist., iron	†15.00-15.50
Buffalo, steel	23.50-24.00
Chicago, iron	19.00-19.50
Chicago, rolled steel	20.50-21.00
Cincin., iron, deal.	19.00-19.50
Eastern Pa., iron	22.50-23.00
Eastern Pa., steel	25.50-26.00
Pittsburgh, iron	22.00-22.50
Pittsburgh, steel	28.00-28.50
St. Louis, iron	20.00-20.50
St. Louis, steel	21.00-21.50

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†17.00-17.50
N. Eng. del. No. 2	17.50-18.50
N. Eng. del. textile	20.00-25.00
Buffalo, cupola	19.00-19.50
Buffalo, mach.	20.00-20.50
Chicago, agri. net	14.50-15.00
Chicago, auto net	16.50-17.00
Chicago, railroad net	15.50-16.00
Chicago, mach. net	16.50-17.00
Cincin., mach. deal.	19.50-20.00
Cleveland, mach.	20.00-21.00
Detroit, cupola, net	†16.50-17.00
Eastern Pa., cupola	22.00-23.00
E. Pa., mixed yard	19.00-19.50
Los Angeles, net	15.00-16.50
Pittsburgh cupola	22.50-23.00
San Francisco, del.	12.50-13.00
Seattle	16.00-16.50
St. Louis, cupola	15.00-15.50
St. Louis agri. mach.	16.00-16.50
St. L., No. 1 mach.	17.00-17.50
San Francisco	14.50-15.00
Toronto, No. 1 mach., net, dealers	16.00-16.50

HEAVY CAST

Boston dist. break.	†14.50-14.75
New England, del.	16.00-17.00
Buffalo, break	16.50-17.00
Cleveland, break, net	15.00-15.50
Detroit, auto net	†17.50-18.00
Detroit, break.	†14.50-15.00
Eastern Pa.	20.50-21.00
Los Ang., auto, net.	14.50
New York, break	†16.00-16.50
Pittsburgh, break	18.50-19.00

STOVE PLATE

Birmingham	9.00-10.00
Boston district	†14.00-14.50
Buffalo	15.00-15.50
Chicago, net	12.00-12.50
Cincinnati, dealers	10.75-11.25
Detroit, net	†11.00-11.50
Eastern Pa.	18.50-19.00
New York, fdy.	13.00-13.50
St. Louis	12.00-12.50
Toronto dealers, net	11.00-11.50

MALLEABLE

Birmingham, R. R.	14.00-15.00
New England, del.	11.50-12.50
Buffalo	21.50-22.00
Chicago, R. R.	21.00-21.50
Cincin., agri., deal.	16.00-16.50
Cleveland, rail	24.00-24.50
Eastern Pa., R. R.	21.50-22.00
Los Angeles	12.50
Pittsburgh, rail	23.50-24.00
St. Louis, R. R.	17.00-17.50

Ores

Lake Superior Iron Ore

Gross ton, 51½ %
Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbessemer	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbessemer	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63%, contract.	9.00-10.00

Foreign Ore
(Prices nominal)

Cents per unit, c.i.f. Atlantic

Manganiferous ore, 45-55% Fe., 6-10% Mn.	14.00-15.00
North African low phos.	14.00
Spanish, No. African basic, 50 to 60%	nom.
Chinese wolframite, short ton unit, duty paid	$23.75-25.00
Scheelite, imp.	$25.00-26.00
Newfoundland fdry. 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$25.00-26.00

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom.
So. African, 50-52%	nom.
Indian, 49-50%	nom.
Brazilian, 43-45%	nom.

Molybdenum

Sulphide concentrates, per lb. Mo. contained, mines.	$0.75

Sheets, Strip

Sheet & Strip Prices, Pages 76, 77

Pittsburgh—Sheet and strip mills are facing production difficulties because definite deliveries cannot be promised. Operations still are short of theoretical capacity, but the rate of increase is slowing down. Sheet mill output has passed 80 per cent, while strip operations are above 70 per cent for hot mills and somewhat better for cold mills. Galvanized sheet production has leveled off at 78 per cent.

Cleveland—Sheet and strip producers generally are unable to find open spots in future operating schedules that will permit acceptance of additional business for delivery this quarter. Absence of first quarter prices has held back the placing of some business for that period. Buyers continue to press for shipment against previous orders.

Chicago—Production continues at virtual capacity, with automotive demand pressing and needs of farm equipment makers and a wide range of other consumers accounting for large tonnages. Inquiries are lighter, but heavy buying is expected to follow announcement of first quarter prices.

Boston—Narrow cold strip mills, except in isolated instances, are booking no tonnage for delivery before next quarter and some have volume on books for shipment in February. This business is being taken at open prices. Fabricators of finished goods are being pushed by retailers and other distributors for deliveries, and this pressure works back to the strip mill. Hot strip mills are also well sold ahead, but in most cases are filling re-rollers' regular needs fairly promptly.

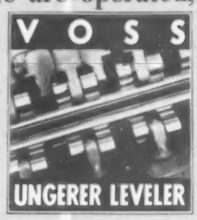
New York—Most buying is for shipment after Dec. 31, with premiums generally paid for earlier delivery. The latter business is going to small producers who managed to keep some of their schedules open. Larger interests only rarely are able to work in additional tonnage in this quarter's schedules. Pressure for delivery still is strong, including more than seasonal demand from household appliance makers.

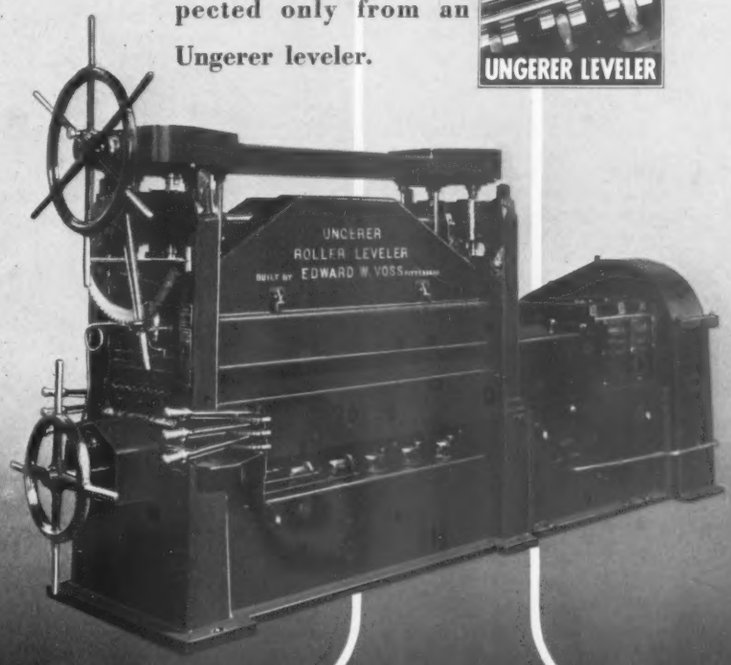
Philadelphia—Pressure for sheets has extended to warehouses, which are finding it difficult to maintain a range of sizes. Some large inquiries have been coming to warehouses sufficient to deplete all stocks in the area, it is said. Indicative of the current situation is the fact premiums of $10 a ton have been quoted on galvanized sheets and hot-rolled strip for export. Crest of the buy-

ONLY

Where roller levelers are discussed, more often than not comparisons are made between the Ungerer leveler and some other sheet or strip flattening machine.

Where roller levelers are operated, it is evident that Ungerer performance can be expected only from an Ungerer leveler.





Edward W. Voss
MACHINERY
2882 WEST LIBERTY AVENUE
DORMONT · PITTSBURGH, PA.

ing wave, however, apparently has passed and some consumers are inclined to await first quarter developments before making additional commitments.

Buffalo — Sheet and strip production hold around 80 per cent, with mills reporting being sold out for this quarter. Buyers show considerable interest in first quarter prices.

Cincinnati—Mills have accepted some additional business for shipment this quarter. Pressure continues for places on first quarter books. Expected price increases are believed to be inspiring inventory accumulations.

St. Louis—Producers of sheets and strip are chiefly concerned with getting out materials ordered. New buying has subsided, as many users are covered and mills have sold prospective output for remainder of the year. Customers are pressing for deliveries, which on some commodities have been extended several weeks.

Birmingham, Ala.—Production of sheets, already at 80 per cent or better, has shown some increase the past week. Demand, as usual, is fairly evenly divided between manufacturers' and roofing sheets.

Plates

Plate Prices, Page 76

New York—Inquiries are heavier, principally for railroad work. Public utilities also are more active. Considerable oil refinery work is under consideration but has yet to materialize. More plate business is being placed at the $5 advance, producers naming this figure still having a fair amount of capacity available this quarter. Export prices have advanced another $5 to 2.70c, f.a.s. for tank plates and 2.80c for ship plates, but little buying has developed.

Boston — More tonnage at 2.35c, base, is being booked, notably for prompt delivery. Producers still on the old base price, 2.10c, generally are well sold, and for immediate needs higher prices are involved. Shipyard releases are mounting, and railroad releases are slightly better, also scattered boiler shop needs. Structural fabricators are specifying lightly.

Philadelphia — Pennsylvania railroad has specified requirements for its large repair and new equipment program. The former already is under way and the latter will become active late this month. Mill backlogs will be further augmented by additional programs of other roads, just announced. Brazilian government has placed ten tenders with Baldwin Locomotive Works for which plates are still pending. Specifications from all classes of consumers continue heavy, including tank builders until recently only moderately active. Export prices have been advanced further to 2.70c and 2.80c, f.a.s., but actual business may be done shortly at 2.45c. A Scandinavian country is willing to buy on this basis.

Birmingham, Ala. — Contracts from railroads, while not yet placed, for recent large car orders, will be available before the end of the month to maintain output of plates at or above the current figure. In addition, tonnage will accrue from shipbuilding as the result of government orders recently placed here. Miscellaneous demand for plates, largely from tank manufacturers, also is well sustained. Production is approximately 90 per cent, and some backlog is evident.

San Francisco — Interest in the plate market centered around the award of 9200 tons for two C-3 type cargo vessels for the maritime commission to Moore Drydock Co., Oakland, Calif. So far this year 89,203 tons have been booked, compared with 37,292 tons for the same period a year ago.

Seattle—Contracts will be placed shortly for about 13,000 tons of plates, 4000 tons of shapes and 1500 tons of miscellaneous steel items for the five freighters to be built for the maritime commission by the Seattle-Tacoma Shipbuilding Co. Tank and boiler work and ship repair jobs are active, Todd Dry Docks, Seattle, having recently used about 200 tons of plates in repair work.

Plate Contracts Placed

7000 tons, two C-3 cargo ships, maritime commission to Moore Dry Dock Co., San Francisco; approximately 3000 tons additional steel for these ships also under protection.

375 tons, three welded tanks, Humble Oil & Refining Co., Baytown, Tex., to Chicago Bridge & Iron Co., Chicago.

165 tons, welded steel pipe, Jamaica, N. Y., to National Tube Co., Pittsburgh.

165 tons, steel pipe, contract 1, Atlantic avenue improvement, Brooklyn, to Alco Products, Dunkirk, N. Y.

Plate Contracts Pending

750 tons, 30-inch, welded steel, cast iron or cement asbestos pipe, San Diego, Calif.; city purchased cast iron pipe.

550 tons, 60 or 72-inch welded steel or wood pipe, Bellingham, Wash.; new bids Oct. 19.

Bars

Bar Prices, Page 76

Pittsburgh—New extras on cold-finished alloy steel bars establish the base quantity at 20,000 pounds and over. Formerly it was 10,000 to 19,999 pounds. Base price is unchanged. Other revisions affect extras for size, manufacturing tolerances, accuracy, grinding, polishing, cutting to length, annealing and heat treating.

Cleveland—Bar producers see no letup in buyers' pressure for delivery. Heavy backlogs preclude acceptance of additional fourth quarter business, and some buyers prefer to await definite prices before contracting beyond Dec. 31. While consumption has increased materially, part of recent orders is destined for inventory.

Boston—Buying is confined largely to alloy material, notably chromium-molybdenum bars for the manufacture of semi-automatic rifles for the government. Purchases by the Springfield, Mass., arsenal are enhanced by heavy needs of a New Haven, Conn., arms manufacturer with contracts for 65,000 new units. Merchant bars demand is fair.

New York — Specifications are brisk and buying again is more active, consumers showing increasing willingness to place tonnage for next quarter, notwithstanding lack of definite price information.

Philadelphia—While business has slackened, some larger makers are unable to promise deliveries until January. Sellers maintain that new extras will apply on all material shipped after Dec. 31. Warehouses are expected to find it necessary to replace stocks before the end of the year at the higher net prices. Cold finished alloy bar makers have effected new extras as of Oct. 16.

Buffalo—Merchant bar mills are operating at capacity against heavy backlogs which are sufficient to sustain output until the end of the year. The expansion in railroad orders is encouraging to producers.

Tin Plate

Tin Plate Prices, Page 76

Tin plate output is at 95 per cent, up 3 points, with most units at capacity. Both domestic and export demand continue strong, but the former is being given precedence. Little business has been accepted for shipment after Dec. 31.

American Can Co. has announced a new contract for the packers can trade. This provides for establishment of the company's tin plate price the first of each year. To the ex-

tent that the average actual cost of tin plate to the company is lower than this price, rebates will be made to customers, less 10 cents per base box. Rebates of 2 per cent for 1939 and 1940 also have been announced, together with price reductions on certain grades of cans.

Pipe

Pipe Prices, Page 77

Cleveland — Delivery problems are less serious in tubular goods than in most steel products. Standard pipe consumption shows some seasonal slackening and consigned stocks generally are adequate. Line pipe deliveries still are somewhat extended.

Chicago—Alabama Pipe Co. is low on 2225 tons of cast pipe for Chicago. The market otherwise is quiet, with few pending jobs taking over 100 tons. Construction involving cast pipe is lagging, except for several WPA projects.

New York—Steel pipe demand has passed its early fall peak, particularly in heating pipe. Meanwhile, resale prices appear to have lost recent strength, the market again being unsettled. Substantial stocks have prevented any serious delivery problems in standard pipe, although line pipe shipments are deferred four to five weeks.

Having covered heavily in advance of the recent $3 a ton rise in cast iron pipe prices, utilities have reduced buying sharply. Export inquiries are numerous and some business is developing at prices above domestic quotations. Municipal buying is light, also procurement division needs. Several hundred tons of steel and cast pipe are required for Bryant Park work, New York, Oakhill Contracting Co., Bronx, N. Y., being low. Larger diameter steel pipe purchases include 330 tons, welded, for Jamaica and Brooklyn projects.

Birmingham, Ala.—Pipe plants continue at approximately 60 per cent of capacity. Most of the tonnage is for public utility use, although government buying continues. Inquiries have shown some increase and several comparatively large lettings are in prospect.

San Francisco—Demand for cast iron pipe has shown improvement and over 3500 tons is now pending. Awards totaled 1610 tons, bringing the aggregate to date to 30,503 tons, compared with 25,109 tons for the same period last year.

Seattle—Interest in cast iron pipe has improved and several projects will be out soon. Awards are pending for 450 tons at Bremerton, Wash., and 230 tons at Vancouver, Wash. Sunnyside, Wash., has $100,000 available for improvements and has called bids Oct. 27 for reservoir and 200 tons or more of 6 to 12-inch cast pipe and accessories, G. D. Hall, Yakima, engineer.

Cast Pipe Placed

1100 tons, 30-inch, San Diego, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

190 tons, 4 to 12-inch, Sacramento, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

175 tons, 6-inch for Coulee City, Wash., to H. G. Purcell, Seattle, for U. S. Pipe & Foundry Co., Burlington, N. J.

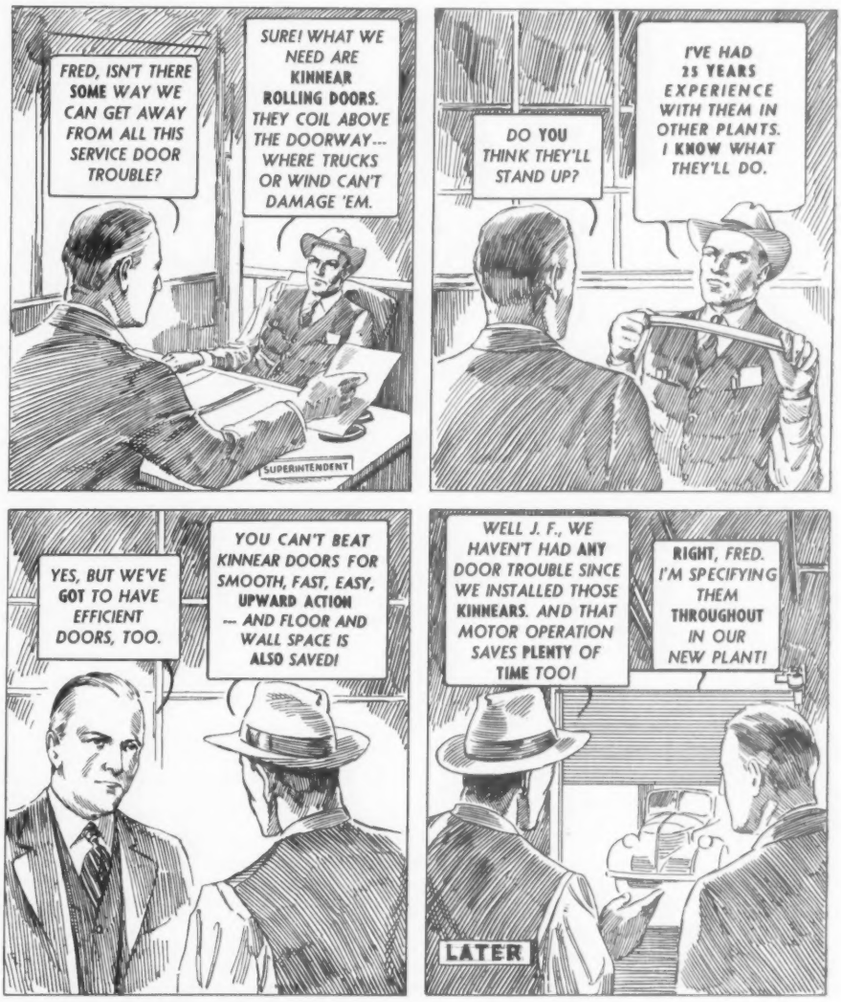
160 tons, 4 and 6-inch, Portersville, Calif., to Pacific States Cast Iron Pipe Co., Provo, Utah.

100 tons, 6 and 8-inch, Newport Beach, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, 8-inch, class D, Ossining, N. Y., to Donaldson Iron Works, Emaus, Pa.

Cast Pipe Pending

2040 tons, 6 and 8-inch, Los Angeles; bids opened.


FRED, ISN'T THERE SOME WAY WE CAN GET AWAY FROM ALL THIS SERVICE DOOR TROUBLE?
SURE! WHAT WE NEED ARE KINNEAR ROLLING DOORS. THEY COIL ABOVE THE DOORWAY--- WHERE TRUCKS OR WIND CAN'T DAMAGE 'EM.
SUPERINTENDENT
DO YOU THINK THEY'LL STAND UP?
I'VE HAD 25 YEARS EXPERIENCE WITH THEM IN OTHER PLANTS. I KNOW WHAT THEY'LL DO.
YES, BUT WE'VE GOT TO HAVE EFFICIENT DOORS, TOO.
YOU CAN'T BEAT KINNEAR DOORS FOR SMOOTH, FAST, EASY, UPWARD ACTION --- AND FLOOR AND WALL SPACE IS ALSO SAVED!
WELL J. F., WE HAVEN'T HAD ANY DOOR TROUBLE SINCE WE INSTALLED THOSE KINNEARS. AND THAT MOTOR OPERATION SAVES PLENTY OF TIME TOO!
RIGHT, FRED. I'M SPECIFYING THEM THROUGHOUT IN OUR NEW PLANT!
LATER

Kinnear Rolling Doors will save money in your plant, too. Get the full story on how they speed up door operation, cut maintenance and repair costs, save floor and wall space, and give smooth, dependable performance at all times -- for a long time! Write today for the complete, illustrated Kinnear catalog!

Offices and Agents In Principal Cities

The KINNEAR MANUFACTURING COMPANY
1780-1800 FIELDS AVENUE COLUMBUS, OHIO
Factories: San Francisco, California; Columbus, Ohio

KINNEAR ROLLING DOORS

220 tons, 6 to 12-inch, Arcadia, Calif.; bids opened.

100 tons, 4 to 12-inch, Compton, Calif.; bids opened.

Wire

Wire Prices, Page 77

Cleveland — Mills are heavily booked through the quarter, but additional business can be accepted in certain items. No letup is apparent in pressure for delivery against previous commitments.

Boston — Despite recent heavy buying, some wire users are seeking additional tonnage, demand being greatly diversified. Moderate orders for first quarter are being taken at open prices. Meanwhile attempts are being made to cover regular customers who failed to anticipate this quarter's needs. Mills in some instances are practically allocating tonnage. Consumption of wire goods continues to mount. Wire rod demand is heavy, but supplies are short with integrated mills working off practically all their own tonnage. One eastern rod producer has been forced to seek tonnage from outside.

New York — Consumers of wire products are pressing for delivery, with most eastern mills operating near capacity. Buying has subsided, but a fair volume of diversified tonnage is being booked for first quarter at open prices. While producers are generally sold up for the remainder of the year, room is being made for what few regular customers failed to anticipate the current rush for material.

Birmingham, Ala. — Substantial wire business continues to be booked, resulting in an accumulation of orders.

Rails, Cars

Track Material Prices, Page 77

Rail and car buying continues and last week saw award of 4960 cars and 124,500 tons of rails, well distributed among suppliers. Early action is expected on about 5000 more cars on which proposals are being considered. Largest car buying has been by roads in the West and Middle West, those in the East being in smaller volumes.

Car Orders Placed

Chicago Great Western, 100 fifty-ton flat cars to Pullman-Standard Car Mfg. Co., Chicago.

Chicago, Rock Island & Pacific, 1000 box cars, to Pressed Steel Car Co., Pittsburgh.

Great Northern, 1500 seventy-five-ton ore cars, divided equally between Pressed Steel Car Co., Pittsburgh and Bethlehem Steel Co., Bethlehem, Pa.

Lehigh & New England, 75 special type 70-ton bulk cement cars, to American Car & Foundry Co., New York.

Maine Central, 10 covered cement hopper cars, to American Car & Foundry Co., New York.

New York, New Haven & Hartford, 250 fifty-ton high side coal cars and 25 steel caboose cars to Pullman-Standard Car Mfg. Co., Chicago.

Seaboard Air Line, 100 all steel 70-ton hopper cars to Bethlehem Steel Co., Bethlehem, Pa., and 100 fifty-ton flat cars to American Car & Foundry Co., New York; these are in addition to the 700 fifty-ton steel box cars recently noted as placed with the Pullman-Standard Car Mfg. Co.

St. Louis-San Francisco, 1500 freight cars, to own shops, for construction next year.

Utah Copper Co., 100 hundred-ton ore cars, to Pressed Steel Car Co., Pittsburgh.

Wheeling & Lake Erie, 200 box cars, to Pullman-Standard Car & Mfg. Co., Chicago; these are in addition to the 400 hopper cars placed recently with Pullman and 100 with Ralston Steel Car Co., Columbus, O.

Locomotives Placed

Brazilian government, 17 locomotives, to Baldwin Locomotive Works, Philadelphia, and American Locomotive Co., New York.

New York, New Haven & Hartford, ten diesel electric switch engines, to American Locomotive Co., New York.

St. Louis-San Francisco, ten freight locomotives, to its own shops, for construction next year.

Rail Orders Placed

Chicago & North Western, 22,000 tons; 14,000 tons to Carnegie-Illinois Steel Corp., Chicago, 6000 tons to Inland Steel Co., Chicago, and 2000 tons to Bethlehem Steel Co., Bethlehem, Pa.

New York, New Haven & Hartford, 15,000 tons, divided equally between Carnegie-Illinois Steel Corp., Pittsburgh, and Bethlehem Steel Co., Bethlehem, Pa.

Union Pacific has announced distribution of its recent purchase of 87,500 tons of rail, as follows: Carnegie-Illinois Steel Corp., Chicago, 38,500 tons, Colorado Fuel & Iron Corp., Denver, 38,500 tons, Inland Steel Co., Chicago, 10,500 tons; no allotment has been made on 20,500 tons of accessories.

Car Orders Pending

Chicago, Burlington & Quincy, 200 fifty-five-ton hopper cars and 100 fifty-ton flat cars, bids asked, with possibility that equipment may be built in the company's own shops; this was recently noted as contemplated and involving 250 instead of 200 hopper cars.

Chief of engineers, war department, Washington, 125 gasoline tank cars, American Car & Foundry Co., New York, low bidder.

Northern Pacific, 750 fifty-ton gondolas.

Tennessee Central, 100 fifty-five-ton hopper cars; bids asked.

Texas & Pacific, 500 fifty-ton steel-sheathed, wood-lined box cars.

Union Pacific, 500 to 1000 fifty-ton ballast cars.

Rail Orders Pending

San Francisco Municipal railroad, 1275 tons 110-pound girder and 100 tons 129-pound guard rail; bids opened.

Shapes

Structural Shape Prices, Page 76

New York—The Passaic river lift span bridge, Newark-Kearny, N. J., taking 4950 tons, is the largest structural inquiry. This will be bid Nov. 10. In addition, 375 tons of miscellaneous steel will be required, including 95 tons of machinery. Inquiry in other directions is lower, few outstanding projects being active.

Pittsburgh—Shapes continue active, with a fair number of new projects announced. The list shows a good balance between industrial expansion and improvement and public jobs. While shape production is retarded in some cases by heavy demand from other products for semi-finished materials, books still are open for fourth quarter business in most instances.

Cleveland—Small inquiries are numerous, the increase in this type being much more pronounced than in larger projects. As a consequence, smaller fabricators are busy. Some shape producers are able to deliver standard plain material in four to six weeks, but shipments of special sections are more extended.

Chicago—Releases to structural fabricators are heavier, principally for small projects. Demand has received considerably less impetus than other steel products the past few weeks, however. Bridge inquiries are principally from railroads, including 2800 tons for the

Shape Awards Compared

	Tons
Week ended Oct. 21	24,104
Week ended Oct. 14	19,927
Week ended Oct. 7	25,063
This week, 1938	14,369
Weekly average, year, 1938	21,568
Weekly average, 1939	22,729
Weekly average, September	27,395
Total to date, 1938	827,101
Total to date, 1939	954,617

Includes awards of 100 tons or more.

Santa Fe and 1400 tons for the Burlington. A Chicago city improvement enterprise requires 2000 tons.

Boston—Contracts, including small lots, are estimated at 1500 tons, including 510 tons for a wharf storage shed, Providence, R. I. District shops booked but a slight part of current tonnage. Inquiry, while moderate, includes 800 tons for an assembly shop addition, torpedo station, Newport, R. I. on which bids are in. Plain material prices are firmer.

Philadelphia—More work for the government is in the offing. Two office buildings for the navy department in Washington will require about 6000 tons. Plans will be issued about Nov. 1 for an aeronautical office building and laboratory. Other work includes an aircraft stores building at Pensacola, Fla., addition to torpedo station at Newport, R. I., and auditorium for the marine corps at Quantico, Va. Private work includes office and laboratory buildings for Sun Oil Co., Marcus Hook, Pa.

Buffalo — With numerous state grade crossings pending, new life has appeared in the recently quiet structural market. Such work involves 3360 tons.

St. Louis—Structural shape demand has not kept pace with other steel items, the only buying of moment being from railroad car builders. Only a few small jobs have been awarded lately and nothing large is in prospect. Fabricators' backlogs have declined perceptibly since mid-September.

San Francisco — Important structural lettings included 3680 tons for two C-3 type cargo vessels for the maritime commission, placed with Moore Drydock Co. and 2950 tons for two seaplane hangars for the naval air base, Alameda, Calif., taken by Herrick Iron Works. Awards aggregated 7423 tons, bringing the year's total to 125,925 tons as compared with 124,498 tons for the corresponding period in 1938.

Shape Contracts Placed

3680 tons, two type C-3 cargo vessels, maritime commission, to Moore Drydock Co., Oakland, Calif.

2950 tons, garage and store building, Eleventh and Chestnut, board of city trusts, Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

2950 tons, two seaplane hangars, specification 8621, naval air base, Alameda, Calif., to Herrick Iron Works, Oakland, Calif.

1810 tons, northwest steam plant, Commonwealth Edison Co., Chicago, to American Bridge Co., Pittsburgh.

1300 tons, apartment house, for 1150 Park Avenue Corp., New York, to Harris Structural Steel Co., New York.

700 tons, state bridge over Passaic river, Paterson, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

700 tons, mill building, National Gypsum Co., Bronx, N. Y., to Ingalls Iron Works Co., Birmingham, Ala., through George A. Fuller Co., New York.

655 tons, garage, Houston, Tex., to Mosher Steel Co., Dallas.

650 tons, viaduct extension, Fourteenth street, Hoboken, N. J., to Bethlehem Steel Co., Bethlehem, Pa., through Joseph P. Scanlon Co., Jersey City, N. J.

650 tons, railroad storage building, Providence, R. I., for city, to Bethlehem Steel Co., Bethlehem, Pa.

635 tons, Robert Driscoll Hotel, Corpus Christi, Tex., to Mosher Steel Co., Dallas.

625 tons, building, for Personal Products Corp., New Brunswick, N. J., to Ingalls Iron Works, Birmingham, Ala.

600 tons, addition, assembly and metal surface building, Curtiss-Wright Corp., Buffalo, to Lackawanna Steel Construction Co., Buffalo.

430 tons, building, National Aniline Co., Grasselli, N. J., to H. R. Goeller Inc., Hillside, N. J.

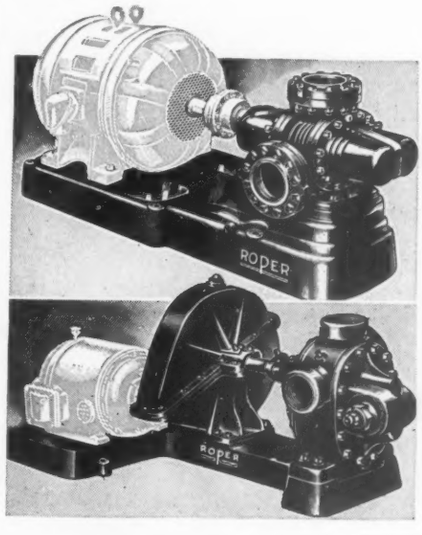
350 tons, Woolworth building, Seattle to Isaacson Iron Works, Seattle; J. B. Warrack Construction Co., general contractor.

Faithful

Always trustworthy . . . always ready to start and finish a pumping job with the highest degree of efficiency. That's Roper Pumps!

They are engineered and built with a minimum of working parts, a stamina that assures years of service, and a smooth freedom that sets a higher maximum for speed.

If you are using Roper Pumps you know their money-saving efficiency . . . if you are not using Ropers, won't you let us tell you how they operate with a lower power consumption and reduce costs to the lowest possible level?



● **Roper Pumps are**

easy to install . . .
easy to service
and Low in cost . . .

GEO. D. ROPER CORP.
Rockford, Illinois, U. S. A.

ROPER
Rotary PUMPS
DEPENDABLE SINCE 1857

345 tons, weave shed, South Boston, Va., to Belmont Iron Works, Eddystone, Pa

335 tons, steel fascine boxes, Shreveport, La., to Jones & Laughlin Steel Corp., Pittsburgh.

325 tons, subway, contract S-6, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

300 tons, medical school library building, Yale University, New Haven, Conn., to Ingalls Iron Works, Birmingham, Ala.; Dwight Building Co., New Haven, contractor.

300 tons, overpass, Los Angeles, to Bethlehem Steel Co., Bethlehem, Pa.

281 tons, five gate frames, specification 876, for Shasta dam, Coram, Calif., to American Bridge Co., Pittsburgh.

275 tons, Nueces Bay power station, for Central Light & Power Co., Corpus Christi, Tex., to Alamo Iron Works, San Antonio, Tex.

260 tons, skelp storage building, National Supply Co., Etna, Pa., to Pittsburgh Bridge & Iron Co., Pittsburgh.

250 tons, heating plant, war department, Denver, Colo., to Burkhardt & Sons Steel & Iron Works Co., Denver, Colo.

235 tons, cold strip mill, Wheeling Steel Corp., Steubenville, O., to Pittsburgh Bridge & Iron Co., Pittsburgh.

235 tons, power house, Procter & Gamble Co., Cincinnati, to Whitehead & Kales, Detroit.

225 tons, junior-senior high school, Lead, S. Dak., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

190 tons, repairs, Norton furnace, Ashland, Ky., to William B. Pollock Co., Youngstown, O.

170 tons, plant addition, Louis Marx Co., Erie, Pa., to R. C. McMannus Steel Construction Co., Buffalo.

150 tons, substation, South Omaha, Nebr., to Tulsa Boiler & Machinery Co., Tulsa, Okla.

150 tons, state bridge, Wadhams, Mich., to Yeager Bridge & Culvert Works, Port Huron, Mich.

150 tons, state bridge, Rippey, Iowa, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

140 tons, heating plant, Lowry Field, Colorado, to Denver Steel & Iron Co., Denver; Mead & Mount Construction Co., Denver, contractor.

140 tons, bridge sec. 116-F-1, Fox Lake, McHenry county, Illinois, to Worden-Allen Co., Milwaukee.

135 tons, beam bridge, Green county, Iowa, to Pittsburgh-Des Moines Steel Co., Des Moines, Ia.

135 tons, cell block, Green Haven, N. Y., prison, to Belmont Iron Works, Philadelphia, through Amsterdam Building Co., New York.

130 tons, bridge K-526, Lansing, Iowa, for Chicago, Milwaukee, St. Paul & Pacific railroad, to American Bridge Co., Pittsburgh.

125 tons, five oil derricks, Union Pacific Railroad Co., Long Beach, Calif., to unnamed interest.

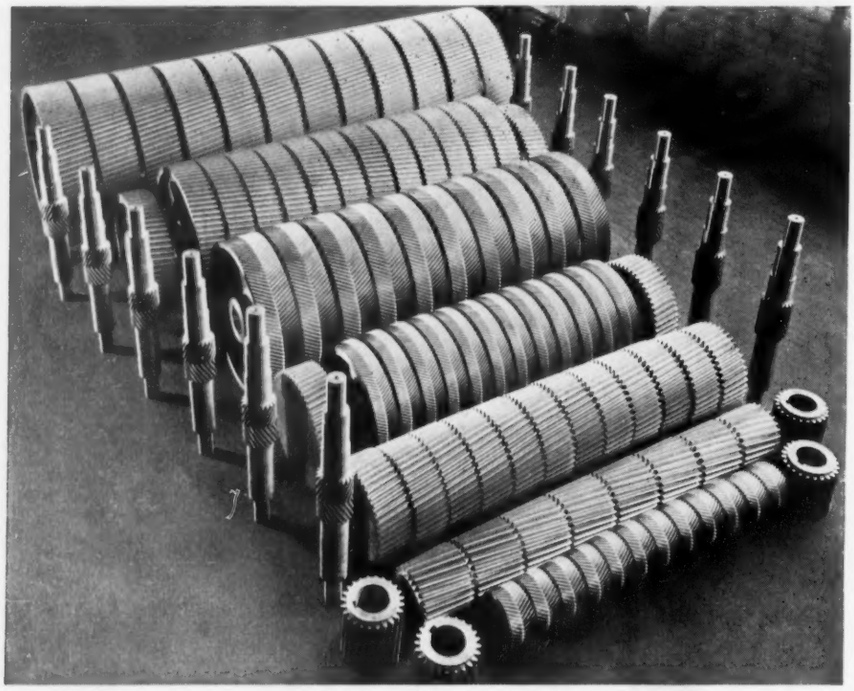
120 tons, 158-foot two-span, wide-flanged beam bridge, Londonderry, Vt., to American Bridge Co., Pittsburgh; Lockwood-Young Co., Concord, N. H., contractor, $31,843.70, bids Oct 6, Montpelier. Albany Steel & Iron Co., Albany, N. Y. awarded reinforcing steel.

110 tons, federal reserve bank building, Dallas, Tex., to Austin Bros., Dallas.

108 tons, 132-foot three-span continuous deck plate girder bridge and 84-foot single span wide-flanged beam bridge, Ludlow-Mt. Holly, Vt., to American Bridge Co., Pittsburgh; Bennington Construction Co., Bennington, Vt., contractor, $59,930.85, bids Oct. 6, Montpelier. Albany Steel & Iron Co., Albany, N. Y., awarded 40 tons reinforcing steel.

100 tons, building, Ugite Sales Corp., Chester, Pa., to Fort Pitt Bridge Works, Pittsburgh, through United Engineers & Constructors Inc., Philadelphia.

Unstated, Oregon state bascule bridge, Coos county, to unstated Portland fabricator; T. Lillibo, Reedsport, Oreg., general contractor.



The Parade of HELICALS AND HERRINGBONES *to Industry*

☆ Ninety-eight more Helical and Herringbone gears are on their way for use in industry's business of transmitting power. Day by day Horsburgh & Scott Herringbone and Helical gears are becoming more popular because of their greater accuracy . . . greater resistance to wear. These and many other features make them most economical, smooth and quiet for transmitting power between parallel shafts.

Your Company Letterhead Brings a Complete 448-Page Catalog

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE • CLEVELAND, OHIO, U. S. A.

Shape Contracts Pending

4950 tons, 2000-foot vertical lift span bridge over 300-foot channel and 19 approach spans, Passaic river, Newark-Kearny, N. J.; bids Nov. 10, E. Donald Sterner, state highway commissioner, Trenton; work also takes 257 tons, sheaves and rope, 95 tons, machinery, and 19,000 square feet, steel grid flooring.

3000 tons, central office building, navy department, Washington, specification 9227; bids Oct. 26.

3000 tons, naval medical center, Washington, specification 9510; plans due about Nov. 1.

2800 tons, bridges, various locations, Santa Fe railroad.

2700 tons, viaduct, Eleventh avenue,

Thirty-third to Thirty-fifth streets, New York, for New York Central railroad.

2200 tons, Wax lake outlet bridge, Calumet, La., for state.

2000 tons, grade separation, bridge and other work, Thirty-first street and Western avenue, Chicago; bids Oct. 24.

1500 tons, apartment, Fifth avenue and Seventy-fourth street, New York.

1400 tons, apartment, Park avenue and Seventy-third street, New York.

1400 tons, bridges, various locations, Milwaukee railroad.

1285 tons, First and Beverly boulevard bridge, Los Angeles; Consolidated Steel Corp., Los Angeles, low.

1200 tons, apartment house, for Fifth Avenue Apartments Inc., New York.

1000 tons, sheet steel piling or 500 tons H columns, second graving dock, navy yard, Bremerton, Wash.; bids opened.

565 tons, railroad bridge, Brompton, Iowa, for Milwaukee railroad.

505 tons, grade crossing elimination, Johnson City, N. Y.; bids Nov. 9, Albany.

500 tons, naval-torpedo station, addition assembly shop, Newport, R. I.; bids in.

500 tons, office and laboratory building, Sun Oil Co., Marcus Hook, Pa., bids Oct. 31.

450 tons, turbine foundations, for Public Service Electric & Gas Co., Burlington, N. J.

375 tons, grade crossing elimination, Livingston County, N. Y.; Hudson Valley Construction Co., Avon, N. Y., low on general contract.

375 tons, addition, Frankford arsenal, Philadelphia, Nelson Pedley Construction Co., Philadelphia, low on general contract; also requires 450 tons sheet piling, 125 tons bars.

360 tons, grade separation, project RC-4084, Orange county, New York; bids Nov. 9, Albany.

350 tons, grade crossing elimination, Union Road, Cheektowaga, N. Y.; Border Building Co., Buffalo, low on general contract; additional 550 tons up for bids Oct. 25.

325 tons, factory and warehouse, for American Textile Co., Pittsburgh.

325 tons, bridge near Stockton, Calif., for state; bids opened.

300 tons, Frye bridge, Springville, N. Y., for Erie county.

300 tons, postoffice and court house, Hammond, Ind.

265 tons, auditorium, marine corps, Quantico, Va.; bids in.

260 tons, state highway bridge, Crookston, Minn.

250 tons, state bridge, Indian Camp creek, Butler county, Kentucky.

250 tons, grade crossing elimination, Tioga County, New York; Maple City Lumber & Supply Co., Sayre, Pa., low on general contract.

245 tons, 435.16-foot five-span continuous overpass, Barton, Vt.; Littleton Construction Co., Littleton, N. H., contractor, $123,812.55, bids Oct. 13, Montpelier. Project also takes 80 tons reinforcing bars.

230 tons, bridge, Mapleton, Iowa, for Milwaukee railroad.

200 tons, grade crossing, Dunkirk, N. Y.; bids Nov. 9, Albany.

200 tons, Klamath river bridge, Humboldt county, California, for state; bids Oct. 26.

195 tons, grade crossing elimination Alleghany county, New York; Bero Engineering & Construction Co., Tonawanda, N. Y., low on general contract.

175 tons, building, for Easy Washing Machine Corp., Syracuse, N. Y.

170 tons, sewage disposal plant, Duluth, Minn., for city.

160 tons, state bridge over Little Miami river, Brown county, Ohio.

150 tons, state bridge, project RC-4085, Tompkins county, New York; bids Nov. 9, Albany.

150 tons, state bridge SAP-207-B, Galisteo, N. Mex.

140 tons, grade crossing elimination Concord, N. Y.; Tonawanda Engineering Co., Tonawanda, N. Y., low on general contract.

120 tons, remodeling Hippodrome, Eveleth, Minn., for city.

120 tons, repairs to pier No. 2, Newport News, Va., for Chesapeake & Ohio railway.

110 tons, building, for Diamond Alkali Co., Alkali, O.

100 tons, power plant addition, American Gas & Electric Service Co., Mishawaka, Ind.

Reinforcing

Reinforcing Bar Prices, Page 77

New York — Reinforcing bar prices, although untested by large orders, are generally holding at

An Organization Specializing In the Production of Cold Rolled Strip Steel

If the demands on your business are creating needs for higher qualities and greater economies in the use of cold rolled strip steel, this organization is fully prepared to face the problem of satisfying those requirements. As specialists in this branch of steel production, we offer you a favorable source of supply for achieving those aims.

Every facility for the best cold rolled strip steel production is at our command. A plant of large capacity is prepared to maintain delivery schedules. With mill and office at one location, customer service is at its highest efficiency.

Send us your inquiry and let us have a Thomas representative call.

THE THOMAS STEEL CO.
Specialized Producers of Cold Rolled Strip Steel
WARREN, OHIO

BRIGHT FINISH UNCOATED, AND ELECTRO COATED IN NICKEL, BRASS, COPPER, BRONZE, ZINC AND TIN

Behind the Scenes with STEEL

Sidewalks of New York

■ When the most recent addition to the Rockefeller Center group was under construction over in New York, the enterprising publicity boys organized a "Sidewalk Superintendents' Club," with an official motto and a comfortable sidewalk clubhouse from which to watch the excavating. Now, a stone's throw from STEEL's 42nd street office a new airline terminal is being constructed at the busy corner of Park avenue. A large sign has been erectetd over the fence around the excavation which reads: "Airline Knothole Club to Kibitz the Erection of the World's Largest Airline Terminal." A raft of synthetic knotholes have been drilled through the fence for the spectators and small signs instruct club members to "Look Here." But the airlines have gone the Rockefellers one better by touching close to all dog lovers' hearts. Down at the bottom of the fence is another flock of knotholes with signs saying "Dogs Look Here."

Available For The Asking

■ And while America keeps its sense of humor, it also studies, argues, analyzes and discusses what may be a "phony," but certainly not a funny, second World War. Opinions are a dime a dozen but nowhere have we seen or heard a more impressive discussion than that given in a sermon by Frank Halliday Ferris to his congregation in Cleveland's Fairmount Presbyterian Church. Listening to Rev. Ferris was James F. Lincoln, president, Lincoln Electric Co. and as a result this excellent talk has been made available in a booklet by Mr. Lincoln's company. It will be worth a few minutes of your time to write for a copy.

Exterminators Please Note

■ STEEL's Readers Service Department is ordinarily pretty much on the ball, but they were stopped cold last week by an inquiry from Cawker City, Kansas: *We are seeking information in how to destroy termites. For three days and four nights we have tried to smoke, bomb, shoot and poison a pet group of the little rascals in the leg of our office chair and even went so far as to sprinkle them with stale beer but they live on happily. We really don't want to get rid of ours but if you know a good annihilator let us know so we can tell our Cawker City friends.*

Current & Choice

■ The current definition of a Super Salesman: *A son-of-a-so-andso from the home office with a special price.*

Another Train

■ Apparently all it took was a sharp pencil and a scratch pad to figure out that it would take 20.45 seconds of counting those clicking rails to determine the speed of the train last week. Which reminds us that two men were walking along a railway track, each at the rate of 3 m.p.h. and in opposite directions. A passing train whizzed by one in five seconds and by the other in six seconds. How many feet long was the train?

Ardent (?) Reader

■ Ralph Pappenheimer of the Specialty Device Co., Cincinnati, says he really only spent about ten minutes on the clicking rails but being ashamed to let his secretary know how he spends his time, he scribbled off a note longhand. Mr. P. tosses us a nicely wilted orchid that we'll cherish always. "I value your publication highly," he says, "and find in it a great many things of interest—*even your column!*"

New & Different

■ Before you pass this copy along to the next avid reader who waits with bated breath and nervous palsy, skip back and spend the next 15 minutets reading about that sensational new metals coating process on pages 42-43. You'll hear a lot about *Corronizing* in the future so get acquainted now.

SHRDLU

2.15c, base. Inquiry is down, the number of small lots up for estimates being fewer than normal while large volume projects are lacking, an exception being 4000 tons for a New York housing project closing Oct. 30. Mills are well sold up on reinforcing bars and are holding distributors to current quotations which in turn results in few concessions to contractor-buyers.

Pittsburgh—Prices are firm at 2.15c. Business has been taken at the new figure, but some producers are not interested in concrete bar tonnage because of limited mill capacity available. Inquiries and orders are lighter.

Chicago—Most producers of billet bars are sold out for the quarter, but rail steel orders still can be booked. Shipments continue unusually heavy, although inquiries are not numerous. A fairly large tonnage is pending, principal items being 12,000 tons for a local filtration plant and 1200 tons for an industrial building.

Boston—Buying is light, with inquiry also down. Prices are firmer, shading being held to scattered isolated instances. Secondary sellers who might shade quotations are influenced by a stronger position taken by mills as to prices on material for future delivery.

Philadelphia—Bethlehem Steel Co. has tentatively booked 1900 tons of bars for Lit Bros. department store warehouse through John McShain Inc. Work has not been authorized as yet. Several government jobs are outstanding. Prices are firm, especially on smaller projects.

San Francisco — Reinforcing bar awards during the past week aggregated 4146 tons, bringing the total to date to 139,046 tons, compared with 116,644 tons for the corresponding period in 1938. Bureau of reclamation placed 1338 tons for delivery at Pollock, Calif., with Columbia Steel Co., 1130 tons for Redding, Calif., with Colorado Fuel & Iron Corp., 210 tons for Odair, Wash., with Bethlehem Steel Co. and 195 tons for Odair with Judson Steel Co.

Concrete Bars Compared

	Tons
Week ended Oct. 21	**9,439**
Week ended Oct. 14	**11,081**
Week ended Oct. 7	**12,054**
This week, 1938	**7,522**
Weekly average, year, 1938	**6,959**
Weekly average, 1939	**9,785**
Weekly average, September	**9,002**
Total to date, 1938	**280,688**
Total to date, 1939	**410,978**

Includes awards of 100 tons or more.

Reinforcing Steel Awards

1900 tons, warehouse, Lit Bros., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.; John McShain Inc., contractor.

1338 tons, bureau of reclamation, invitation 33,301-A-1, Pollock, Calif., to Columbia Steel Co., San Francisco.

1337 tons, Shasta-Central Valley project, California, to Columbia Steel Co., San Francisco, through bureau of reclamation, Denver, at $53,487.

1130 tons, bureau of reclamation, invitation 33,341A, Redding, Calif., to Colorado Fuel & Iron Corp., Pueblo, Colo.

950 tons, Chicago subway section, to Bethlehem Steel Co., Bethlehem, Pa.

500 tons, air corps barrack units, Lowry Field, Colorado, to Colfax & Larimer, Denver; Meade & Mount Construction Co., Denver, contractor; Denver Steel & Iron Works, Denver, awarded structural steel.

350 tons, United States ordnance depot, Fredericktown, N. J.; American Steel Engineering Co., Philadelphia, low on 240 tons, Taylor Davis Inc., Philadelphia, on 110 tons.

285 tons, Columbia Steel Co.'s Seattle warehouse, to Seattle Steel Co.

255 tons, Russian Gulch bridge, Mendocino county, California, for state, to Truscon Steel Co., San Francisco.

240 tons, two seaplane hangars, naval air base, Alameda, Calif., to Herrick Iron Works, Oakland, Calif.

210 tons, bureau of reclamation, invitation 38,486-A, Odair, Wash., to Bethlehem Steel Co., Seattle.

195 tons, bureau of reclamation, invita-38,479-A, Odair, Wash., to Judson Steel Corp., San Francisco.

152 tons, bureau of reclamation No. 48216A, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, bars and building mesh, addition, Pratt & Whitney division, United Aircraft Corp., Hartford, Conn., to Truscon Steel Co., Youngstown, O.; R. C. Bent Co., Hartford, contractor.

136 tons, mostly mesh, highway project RD-4072, Rensselaer county, New York, to American Steel & Wire Co., through J. J. Belottee & Son Construction Co., Troy, N. Y., contractor.

110 tons, building, Climax Molybdenum Co., Climax, Colo., to Republic Steel Corp., Cleveland.

101 tons, engine test house, naval air base, Alameda, Calif., to Bethlehem Steel Co., San Francisco.

100 tons, highway project, Putnam county New York, to Bethlehem Steel Co., Bethlehem, Pa., through Thomas Brogan, Yonkers, N. Y.

Reinforcing Steel Pending

7000 tons, filtration plant, west half, Chicago; bids Nov. 15.

1800 tons, General Electric Co. building, Chicago.

1200 tons, housing project, Peoria, Ill.

675 tons, torque stand building, Wright field, Dayton, O.

675 tons, flood wall, Ironton, O.

600 tons, grain elevator, Enid, Okla.

250 tons, non-commissioned officers' quarters, Hickam Field, T. H.; general contract to Tucker McClure, 704 South Spring street, Los Angeles, at $97,183.

200 tons, highway and bridge projects, Connecticut; bids Oct. 25.

175 tons, ammunition magazines, Fort Mifflin, procurement division, treasury department, Harrisburg, Pa.; Concrete Steel Co., Pittsburgh, low.

150 tons, nine ammunition storehouses, Mare Island, Calif., navy yard; general contract to MacDonald & Kahn Co. Ltd., Financial Center building, San Francisco.

136 tons, including 52 tons mesh, noncommissioned officers' quarters, Wheeler Field, T. H.; Walker & Olunf, Honolulu, low on general contract at $273,-074.

117 tons, Klamath river bridge, Humboldt county, California, for state; Oct. 26.

100 tons, building for Columbia Broadcasting Co., Harold Way and Gower street, Los Angeles; bids being taken.

100 tons, building, Bell Telephone Co., Philadelphia, bids November 6.

Pig Iron

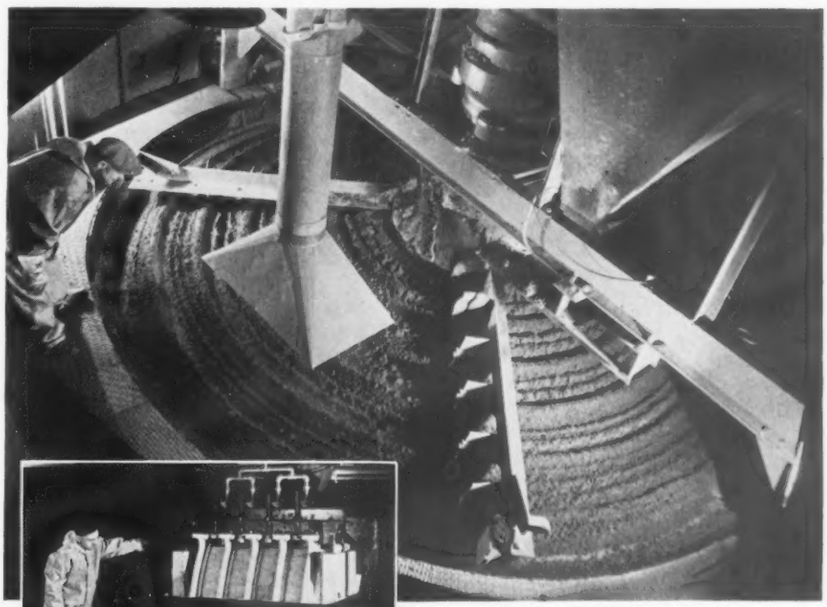
Pig Iron Prices, Page 78

Pittsburgh—A few pig iron sales are being made, but most buyers are well covered. Iron available for sale is not plentiful but the supply situation is not sufficiently acute to result in premium prices. Coke is in better supply with increasing beehive activity. Beehive coke is firm at about $5.50 for the standard furnace grade. More than 4400 beehive ovens were active last week out of 6000 available units.

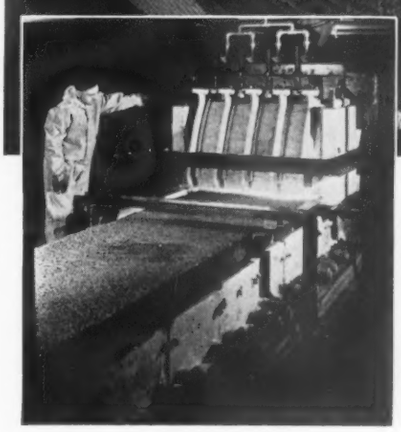
Cleveland—A further increase in shipments is indicated this month, and heavy backlogs of sellers point to sustained movement the remainder of the year. Unlike some steel products, pig iron is not sold out

FROM ORE TO METAL

The Story of St. Joe Electro-Thermic Zinc—Number 8 of a Series



CHARGING HEARTH OF ROASTERS



SINTERING MACHINE

ROASTING and SINTERING. Zinc concentrates from the New York State mines of the St. Joseph Lead Company arrive at the company's smelter at Josephtown, Pa., containing about 58% zinc and 32% sulphur. The first operation is a roasting process to reduce the sulphur. This is accomplished on three 21-foot diameter Nichols-Herreshoff furnaces. These furnaces have 12 hearths and the concentrates are heated and dropped from hearth to hearth by mechanical rabbles. The resultant calcine contains 67 to 68% zinc and about 1% sulphur. The sulphur dioxide gas passes on to the contact acid plant. The second operation is the sintering of the calcine. This is done on 42" x 44' Dwight-Lloyd gas fired sintering machines. This operation agglomerates the zinc ore and eliminates lead and cadmium. The sinter, which has a hard open lacelike structure, contains about 59% zinc and less than 1/4 of 1% sulphur. After screening, this material is conveyed to the furnace bins where it awaits treatment by the electrothermic furnaces, for conversion into St. Joe slab zinc.

ST. JOSEPH LEAD COMPANY

250 PARK AVENUE
NEW YORK

•

ELDORADO 5-3200

PLANT AND LABORATORY, JOSEPHTOWN, BEAVER COUNTY, PENNSYLVANIA

for the quarter and some additional orders are being placed. Foundry operations are increasing, although some iron is going into inventories.

Chicago—October shipments may be the largest in ten years, except for March, 1937. A 30 per cent gain over September is indicated. Consumption continues brisk. Some foundries, including stove and specialty plants, are slower, but others are busier and generally on a five-day week.

New York—Expansion in shipments so far this month reflects a generally heavier melt. In certain lines consumption is off seasonally, such as soil pipe, but this is more than offset by better operations of stovemakers, machinery equipment builders and railroads, in particular.

Philadelphia — Shipments this month are setting new records for recent years. Some plants are at capacity, including pipe makers and those operated in conjunction with equipment makers. Some of the latter are finding it necessary to farm out more work. The hardware trade, long comparatively inactive, now is feeling the effects of the uptrend in business. Current speculation centers around a possible advance of $1 to $2 in price.

Cincinnati — Deliveries are off moderately since a month ago when melters rushed to take in supplies.

St. Louis — Shipments continue heavy, coupled with further expansion in foundry and steelworks melt. Indications are for a further gain this month over September, best month for deliveries in two years. New buying has virtually disappeared.

Toronto, Ont.—While the melt is improving steadily, Canadian pig iron sales are tapering, since larger consumers are covered for the quarter. Bookings for the week were slightly over 1000 tons, with deliveries against contract around 4000 tons weekly. Higher prices are expected for first quarter.

Scrap

Scrap Prices, Page 80

Pittsburgh—Some scattered sales have been made to smaller consumers lately at prices 50 cents to $1 below previous peak levels. No. 1 steel is off $1 since a week ago.

Chicago—Scrap has tightened up after recent weakness. No. 1 steel settled $1 last week to $18.50 to $19, but brokers are unable to buy from dealers for less than $18.50 and are not anxious to sell at $19. Recent price changes are mixed, most revisions being downward.

Boston—Leveling off, with some declines in cast grades and skeleton for domestic delivery, scrap prices appear to have reached the peak for the time being. Some further reaction is considered not unlikely. Buying for export is less active than before the war.

New York — Prices generally are steady and unchanged, although heavy melting steel for domestic shipment is slightly easier. On the other hand, No. 1 steel for barge delivery for export is up 50 cents. Domestic inquiry is slightly more active, but buying is light.

Philadelphia — Most prices are down 50 cents to $1. Larger consumers now are covered for 30 to 45 days and are not anxious for material but are willing to take additional tonnage at lower prices to average out scrap costs. There is some indication that the market will level out near present levels.

Detroit—A measure of quiet has descended over the market here, price movements being narrower. A few steel grades are off an average of 50 cents but the precipitate downward movement appears to have been checked for the time being.

Cincinnati — Recent bidding on railroad lists disclosed lower prices, and the softer market is bringing out more tonnage from dealers. Opinions on the outlook are mixed.

San Francisco—As most Japanese bottoms have been loaded under the old rate of $4.50, little interest is being displayed in the market for export material under the new prevailing rate of $9.50 and as a result f.a.s. prices have fallen off about $1 on No. 1 and 2 heavy melting.

Toronto, Ont. — Dealers' buying prices were advanced 50 cents to $2, with similar increases reported for the Montreal market. Cast grades showed the largest gains, steel scrap being up as much as $1.

Warehouse

Warehouse Prices, Page 79

Cleveland—Demand is heavier than a month ago, influenced by an increase in ordinary needs of consumers and by deferred mill deliveries on some products. New quantity extras on cold-finished alloy bars are looked for soon.

Chicago—Business continues to increase, with a 10 per cent gain indicated for October. Practically all products are affected. Warehouse stocks generally are adequate.

Detroit — Base prices have been raised 25 cents per 100 pounds on galvanized sheets, hot-rolled carbon bars and bands and 15 cents on plates, shapes and floor plates. Quantity extras on cold-drawn carbon bars and galvanized sheets have been revised.

Philadelphia—Volume is increasing both as a result of better business and extended mill deliveries. Large inquiries are reported which ordinarily would be directed to mill sources.

Cincinnati—Warehouses are increasingly busy, some orders resulting from inability of mills to give prompt shipment. Base quantity on cold-finished carbon bars has been raised from 1000 pounds to 1500.

San Francisco — Movement of warehouse products during the past few weeks has been brisk and many small consumers have, to some extent, speculated as regards future requirements. An encouraging feature, from the distributors' standpoint, is that warehouse prices have advanced from low to normal levels.

Steel in Europe

Foreign Steel Prices, Page 79

London — (*By Cable*) — Great Britain has cancelled import duties on pig iron. Foundry demand is increasing and output of hematite is expanding. Semifinished supplies are adequate for present needs. Tin plate production is active and most works are booked to the end of January. Exports are strong, especially to South America. Prices are rising.

Belgium and Luxembourg report export trade improving and the raw materials situation is much improved.

Expectation is that prices of British steel will be raised at the beginning of November when the stabilization period ends. The increase probably will more than balance cuts imposed in January. The plan is to pool the increases to be used by the British Iron & Steel Corp. to meet additional cost of raw materials resulting from war conditions.

Iron Ore

Iron Ore Prices, Page 80

Cleveland — Ore-carrying activity on the Great Lakes apparently has reached a peak. Of the 303 bulk freighters in the American fleet, 287 or 94.7 per cent, were active Oct. 15, according to C. C. Lindeman, statistician for M. A. Hanna Co. Fifteen of the remainder will remain idle, it is stated, and the sixteenth is holding storage grain. All but one of the 287 active vessels were carrying ore the middle of this month. A month ago 87.13 per cent of all boats were in com-

mission, compared with 50.32 per cent in October last year.

September consumption of Lake Superior iron ore totaled 4,184,884 gross tons, against 3,775,132 tons in August and 2,313,865 tons a year ago, the Lake Superior Iron Ore association reports. To Oct. 1 consumption this year was 28,074,239 tons, against 16,731,692 tons a year ago. Stocks on hand increased about 3,000,000 tons in September but continued smaller than the year before. Comparisons follow:

Iron Ore on Hand

	At Furn.	On Docks	Total
Oct. 1, 1939.	31,203,096	4,650,077	35,853,173
Month ago...	28,365,093	4,349,279	32,714,372
Year ago....	32,515,577	5,357,982	37,873,559

Nonferrous Metals

New York — Interest in nonferrous metal markets shifted from prices and buying transactions to shipments last week. With consumption in all lines at an active pace consumers generally are taking out tonnages as originally scheduled. Estimates of the heavy October movement are 80,000 tons of copper, 65,000 tons of lead, and nearly 70,000 tons of zinc.

Copper — Heavy sales on the Commodity Exchange coupled with an increase in demand for export metal tended to strengthen the outside electrolytic market. Resale metal closed at 12.75c, the highest level in recent weeks. While producers held prices unchanged at 12.50c, Connecticut, offerings were tighter in some directions.

Lead — Bookings were substantial again but the daily volume showed a steady decline. New inquiry is chiefly for November delivery at the steady price level of 5.35c, East St. Louis.

Zinc — Producers continued to make freer offerings at the open market price of 6.50c, East St. Louis.

Tin — Prices were entirely nominal due to the scarcity of offerings. With sales negligible in London and very light in the East, importers continue to have difficulty in covering their commitments. However, tin afloat is the heaviest ever recorded which soon should relieve the tight spot situation.

Ferroalloys

Ferroalloy Prices, Page 78

New York — Ferromanganese demand continues heavy, and October shipments may exceed September's despite active coverage at lower prices last month. Some export inquiries are reported.

Nonferrous Metal Prices

Oct.	Copper: Electro. del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: *Spot	Straits Tin, New York: *Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
14	12.50	12.50	12.25	55.00	47.00	5.50	5.35	6.50	20.00	14.00	35.00
16	12.50	12.50	12.12½	55.00	47.50	5.50	5.35	6.50	20.00	14.00	35.00
17	12.50	12.50	12.12½	*	48.56	5.50	5.35	6.50	20.00	14.00	35.00
18	12.50	12.50	12.12½	55.00	49.50	5.50	5.35	6.50	20.00	14.00	35.00
19	12.50	12.50	12.12½	56.00	49.50	5.50	5.35	6.50	20.00	14.00	35.00
20	12.50	12.50	12.12½	55.00	49.50	5.50	5.35	6.50	20.00	14.00	35.00

*Nominal.

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 12.50c Conn. copper

Sheets

Yellow brass (high)	19.06
Copper, hot rolled	20.87
Lead, cut to jobbers	8.30
Zinc, 100 lb. base	11.25

Tubes

High yellow brass	21.81
Seamless copper	21.37

Rods

High yellow brass	15.23
Copper, hot rolled	17.37

Anodes

Copper, untrimmed	18.12

Wire

Yellow brass (high)	19.31

OLD METALS

Nom. Dealers' Buying Prices

No. 1 Composition Red Brass

New York	8.37½-8.50
Cleveland	9.25-9.50
Chicago	8.75-9.00
St. Louis	8.50-8.75

Heavy Copper and Wire

New York, No. 1	10.00-10.25
Cleveland, No. 1	10.25-10.50
Chicago, No. 1	10.00-10.25
St. Louis	9.75-10.00

Composition Brass Turnings

New York	8.00-8.25

Light Copper

New York	8.00-8.25
Cleveland	8.25-8.50
Chicago	7.87½-8.12½
St. Louis	7.75-8.00

Light Brass

Cleveland	5.00-5.25
Chicago	5.62½-5.87½
St. Louis	5.00-5.50

Lead

New York	4.85
Cleveland	4.62½-4.75
Chicago	4.25-4.50
St. Louis	4.00-4.25

Zinc

New York	3.50-3.75
Cleveland	3.25-3.50
St. Louis	3.75-4.00

Aluminum

Mixed, cast, Cleveland	9.75-10.00
Borings, Cleveland	7.25-7.50
Clips, soft, Cleveland	16.00-16.50
Misc. cast, St. Louis	8.25-8.50

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads	13.75
Standard No. 12 aluminum	14.00-15.00

AT THE HEART

. . . and in the heart . . .

OF CLEVELAND

A red-cap is the only taxi you need when you come to Cleveland—because Hotel Cleveland adjoins the Union Terminal. And here you're at the heart of the city — next door to everything you want to see.

But convenience is only one of many reasons you'll like Hotel Cleveland. Food we believe unequalled in hotels . . . more like a transatlantic liner . . . served in four colorful restaurants. Friendliness you'll be quick to sense . . . a *genuine* interest in seeing that you enjoy every moment in our hotel and city. A room as crisp and thoughtfully arranged as your own at home. Public rooms to match your mood —home-like quiet, restful concert music, or gay dancing.

Small wonder that Clevelanders prefer the Cleveland, and experienced travelers warmly agree with them.

HOTEL CLEVELAND Cleveland

Construction and Enterprise

Ohio

DALTON, O.—Village, Paul A. Stockham, mayor, plans construction of sewage disposal plant and sewers; to cost approximately $52,000. Project may be undertaken without federal aid. O. C. Steiner, Orville, O., consulting engineer.

DAYTON, O.—Contracting officer, materiel division, Wright field is taking bids until 10 a.m., Oct. 30, on the following machinery: one 14-inch geared head tool room precision lathe; one individual motor drive mica undercutting bench lathe; four motor-driven 9-inch swing bench type lathes; two precision type bench lathes with 36-inch bed lengths; thirty lathes, engine, geared head, 14-inch swing, 6-foot bed, with motor for operation; one jeweler's bench lathe with accessories; one precision tool room lathe; one 17-inch swing over gap, 11-inch swing over bed, spinning lathe; one turret lathe; miscellaneous accessory equipment.

MILAN, O. — Village, H. C. Moore, mayor, plans construction of sewage treatment plant and sewers with WPA aid; to cost about $120,000. Clarence A. Voight, city hall, consulting engineer.

NEW LONDON, O. — Village, C. A. Blackman, mayor, plans sewage system and treatment plant with WPA assistance. Plans completed, tentative WPA approval granted; bids will be taken on materials as soon as final approval is received. Bond issue $45,000 approved Nov. 8, 1938. Granville Scott, Citizens Bank building, Norwalk, O., consulting engineer.

NEW PARIS, O.—Village, F. O. Baumgardner, mayor, plans completion of sewage disposal plant and sanitary sewer started as WPA project in Sept. 1938, left incomplete owing to lack of funds. Owner seeking supplementary WPA assistance.

OAK HARBOR, O.—Salem township board of trustees, Frank A. Miller, clerk, plans purchase of road maintenance equipment. County commissioners have approved purchase.

RAYLAND, O.—Village, Joseph N. Hunter, mayor, plans waterworks system. Special $16,000 bond issue to be voted on Nov. 7. Max Gorsuch, 1600 Sinclair avenue, Steubenville, O., consulting engineer.

UTICA, O.—Licking Rural Electric Co-operative Inc., C. D. Dunlap, superintendent, has been granted $259,000 REA loan for construction of 273 miles rural transmission line in four counties. Putnam & Woolpert, 132 North Main street, Dayton, O., consulting engineers.

New York

ENDICOTT, N. Y.—Board of trustees plans sewage disposal plant to end pollution of Susquehanna river; to cost about $250,000.

Pennsylvania

MEADVILLE, PA. — Northwestern Rural Electric Co-operative Association Inc., Bruce V. Hecker, superintendent, is preparing plans for construction of 169 miles rural transmission line in Erie and Venango counties; to cost $150,000. Gibbs & Hill Inc., Pennsylvania station, New York, engineers.

Michigan

BESSEMER, MICH.—City will take bids to Oct. 31 on municipal power and light plant. Walter E. Maki is city clerk; Ayres, Lewis, Norris & May, Ann Arbor, Mich., engineers.

Alabama

MONTGOMERY, ALA.—Southern Pine Electrification Corp. has plans in progress for construction of 150 miles rural transmission line in Monroe, Conecuh, Escambia counties with REA funds. Gordon Persons Co., First National Bank building, engineer.

District of Columbia

WASHINGTON — General purchasing officer, Panama canal, will open bids at 10:30 a.m., Nov. 1 on the following machinery and appurtenances for subaqueous drill barge: four piston type submarine drills; four diesel engine driven air compressor units; one diesel engine driven auxiliary generator set; two high pressure air compressors; one drill steel sharpener equipment; one drill press; two springline hoists; three drill towers; three steel hoists; 12 miscellaneous type pumps; two switchboards, other miscellaneous equipment.

Kentucky

BOWLING GREEN, KY.—Warren Rural Electric Co-operative Corp. has been granted $151,000 REA loan for 150 miles rural transmission line.

FLEMINGSBURG, KY.—Fleming-Mason Rural Electric Co-operative Corp., James K. Smith, superintendent has been granted $188,000 REA fund for construction of 158 miles rural transmission line in seven counties.

WINCHESTER, KY.—Clark Rural Electric Corp. has been granted $80,000 REA fund for construction of extensions to rural transmission lines in six counties. Work to start about Dec. 1.

Georgia

CAIRO, GA.—Grady County Electric Membership Corp., J. H. Collins, president, has $66,000 for rural transmission line in Grady county.

CUMMING, GA.—Forsyth county rural electric membership association, Lewis T. Ledbetter, superintendent, has REA allotment of $144,000 for construction of 166 miles rural transmission line in four counties.

MACON, GA.—Commonwealth & Southern Corp., New York, Wendell L. Willkie, president, has announced that Georgia Power Co., a subsidiary, plans construction of a $4,000,000 generating plant immediately with initial installation of steam operated 35,000 kilowatt turbogenerator. Building to be designed to accommodate additional two units of same capacity.

North Carolina

FARMVILLE, N. C.—Pitt & Greene Electric Membership Corp. has secured $69,000 REA fund for construction of 68 miles rural transmission line.

FOREST CITY, N. C. — Rutherford Rural Electric Mutual Association Inc. has been granted $216,000 REA allotment for 253 miles rural transmission line in six counties.

Tennessee

CHATTANOOGA, TENN.—Dixie Mercerizing Co., 1100 Watkins street, has plans under way for addition to plant to cost about $50,000. Robert & Co., Bona Allen building, Atlanta, Ga., engineers.

Missouri

FULTON, MO.—Callaway county electric co-operative association has been granted $15,000 REA loan for 16 miles rural transmission line.

ROCKPORT, MO.—Atchison-Holt electric co-operative, Bruce S. Gibbs, superintendent, has $37,000 REA loan for construction of 40 miles rural transmission line. H. H. Henningson, 1904 Farnam street, Omaha, Nebr., is consulting engineer.

STE. GENEVIEVE, MO. — Missouri General Utilities Co. has been granted $48,500 REA loan for construction of 52 miles rural transmission line.

Wisconsin

BARRON, WIS.—Barron county electric co-operative, Frank Havel, superintendent, has been allotted additional $207,000 REA loan for 198 miles rural transmission line in six counties. Wisconsin Development Authority, Tenney building, Madison, Wis., engineer.

Minnesota

FARIBAULT, MINN.—Faribault Canning Co. plans boiler plant addition and installation of boiler and other equipment. Ralph W. Richardson, Oppenheim building, St. Paul, consulting engineer.

JACKSON, MINN. — Federated rural electric association, Paul Ferguson, superintendent, has been allotted $100,000 REA fund for construction of 107 miles rural transmission line in Martin and Jackson counties.

RED WING, MINN.—S. B. Foot Tanning Co., S. B. Foot, president, plans large addition to present tanning plant.

Texas

AZLE, TEX.—Tri-County Electric Co-operative Inc. has been granted $117,000 REA allotment for construction of 156 miles rural transmission line.

BARTLETT, TEX.—Bartlett Community Light & Power Co. has $60,000 REA allotment for construction of 38 miles rural transmission line.

DOUGLASVILLE, TEX. — Texas-Cass electric co-operative has secured $92,000 REA allotment for construction of 122 miles rural transmission line in five counties.

HAMILTON, TEX.—Hamilton county electric association has been granted $31,000 REA loan for construction of 41 miles rural transmission line.

JOHNSON CITY, TEX. — Lone Wolf electric co-operative, J. H. Carlock, representative, plans 175 miles rural transmission line in Mitchell county, to cost about $110,000.

LITTLEFIELD, TEX.—Lamb County Electric Co-operative Inc. has $120,000 REA allotment for construction of 158 miles rural transmission line.

MEMPHIS, TEX.—Hall county electric association has $89,000 REA loan for construction of 126 miles rural transmission line.

MERCEDES, TEX.—Magic valley electric co-operative has been granted $115,000 REA allotment for construction of 144 miles rural transmission line.

ROTAN, TEX.—Midwest electric association has secured $107,000 REA allotment for construction of 142 miles rural transmission line.

SINTON, TEX.—San Patricio electric association has secured $84,000 REA allotment to finance construction of 111 miles rural transmission line.

STEPHENVILLE, TEX.—Erath county electric co-operative association has been granted $93,800 REA loan for con-

THE PURE OIL CO.

PURE THREE POINT LUBRICATION
A Complete Line of Industrial Petroleum Lubricants

Ask a Pure Oil Engineer to help solve your lubrication problems

CHICAGO U.S.A.

"COWLES"

ROTARY SLITTING KNIVES
for Modern Requirements
Highest Quality . . . . Long Service
The Product of Many Years Specialization
MADE BY TOOLMAKERS
COWLES TOOL COMPANY
Cleveland, Ohio

P&H

Serving American Industry Since 1884 — Overhead Electric Cranes and Hoists
Crawler Cranes • Electric Motors • Arc Welders • Welding Electrodes.
Harnischfeger Corporation
4411 W. National Ave., Milwaukee, Wis.

PERFORATED METALS OF EVERY DESCRIPTION

Promptly made to your exact specifications. We can furnish any size or style of perforations desired.
CHICAGO PERFORATING CO.
2443 W. 24th Place Canal 1459 Chicago, Ill.

LOCOMOTIVE CRANES CRAWLER CRANES SHOVELS

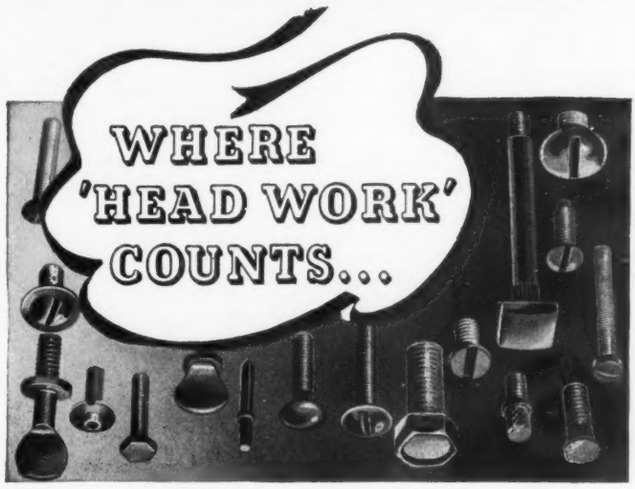
OHIO

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS OHIO

SMP Co.

SHENANGO-PENN

Ingot Molds of any size, shape or quantity
Manufactured by
SHENANGO-PENN MOLD CO., PITTSBURGH, PA.



Alert buyers intent on procuring better fastening devices at a saving are discovering that PROGRESSIVE screws and headed parts — formed accurately and economically by the cold upset process—are a considerable factor in keeping production costs down and profits up. You will find it worth while to submit your problems to PROGRESSIVE experts who specialize in made to order items requiring special heads, threads or finishes. Address your inquiry to:

QUALITY PROMCO BRAND

The PROGRESSIVE MFG. CO

TORRINGTON · · · CONNECTICUT

LIGHT AS A FEATHER STRONG AS A BULL

SAWYER AERIAL GRINDERS

Cut line power and man power and step up output with Sawyer Hi-Power Grinders, made in 1, 1½ and 2 h.p. aerial types, and 3½ h.p heavy duty suspended aerial type.
Patented innovation Sawyer motors have the smallest diameter and the least weight of any motor of equal power. Power pull out twice rated capacity. Simplicity eliminates weight and wearing parts and reduces size to "get-at-ability" dimensions.
Totally enclosed motor, thoroughly ventilated, dust-proof, splash-proof, drip-proof. All sizes use 220 volt, 3-phase, 60 cycle current at 3600 r.p.m.
Send for bulletins describing full line of portable and stationary grinders, blowers and other tools powered by Sawyer Hi-Power Motors.

NO BRUSHES · NO COMMUTATION · NO GEARING
SAWYER
HI-POWER ELECTRIC MOTORS
MORE POWER · LESS WEIGHT · HIGHEST EFFICIENCY

Write for your copy of Catalog showing complete Sawyer line of Grinders, Sanders, Buffers, Blowers, Pumps and Motors.

SAWYER ELECTRICAL MFG. CO.
5715 EAST LENEVE AVENUE
LOS ANGELES, CALIFORNIA

Distributors and Stocks in All Principal Cities

ADVERTISING PAGES REMOVED

struction of 122 miles rural transmission line.

VAN ALSTYNE, TEX.—Grayson-Collin Electric Co-operative Inc. has secured additional $94,000 REA loan for 125 miles extensions to rural transmission lines.

WELLINGTON, TEX.—Greenbelt electric association has secured $100,000 REA allotment for construction of 150 miles rural transmission line.

Kansas

LITTLE RIVER, KANS.—City, C. W. Trower, mayor, will file WPA application for funds to finance construction of sanitary sewers and complete disposal plant to cost about $72,950. Paulette & Wilson, Public Utility building, Salina, Kans., consulting engineers.

MAHASKA, KANS.—City has filed application for WPA funds and is preparing plans for construction of a complete water works system to cost $55,000. Paulette & Wilson, Public Utility building, Salina, Kans., consulting engineers.

North Dakota

DEVIL'S LAKE, N. DAK.—City, H. W. Swenson, auditor, is contemplating improvement of sewage disposal plant, including its removal to new location, probably as WPA project. Lium & Burdick, YMCA building, Grand Forks, N. Dak., are consulting engineers.

HILLSBORO, N. DAK.—Red river electric co-operative, Ralph Diehl, president, has been allotted $229,000 REA fund for construction of 240 miles rural transmission line in Traill, Grand Forks counties. H. S. Hyland, 1114 Eighth avenue North, Fargo, N. Dak., consulting engineer.

South Dakota

BROOKINGS, S. DAK.—South Dakota state highway commission, H. C. Westphal, Pierre, S. Dak., secretary, will open bids Oct. 25 on highway division machine and maintenance shop here.

STURGIS, S. DAK.—City, W. W. A. Devers, auditor, is taking bids to 8 p.m., Oct. 25, on construction of sewage disposal plant as per specifications on file with auditor or Chenoweth, Fraser & Forrette, Elks building, Rapid City, S. Dak., consulting engineers. Certified check 5 per cent to accompany bid.

Nebraska

SPENCER, NEBR.—Nebraska Hydroelectric Power Co. Inc. has filed articles of incorporation. Harold E. Wood, W. W. Skinner, and Frank J. McArthur, Spencer, are incorporators. Company plans to purchase, install, erect, maintain and operate a plant or plants for lighting, heating and power, or for any and all other purposes for which similar plants could be used.

TEKAMAH, NEBR.—Burt county rural public power district, E. D. Beck, superintendent, has been allotted $89,000 REA fund for construction of about 98 miles rural transmission line in Dodge, Washington, Thurston and Burt counties. H. H. Henningson, 1904 Farnam street, Omaha, Nebr., consulting engineer.

WEST POINT, NEBR.—Cuming county rural public power district, Lester C. Sellentin, superintendent, has been allotted $87,000 REA loan to finance construction of approximately 102 miles rural transmission line in seven counties. H. H. Henningson, 1904 Farnam street, Omaha, Nebr., consulting engineer.

Iowa

BROOKLYN, IOWA—City, F. J. Gates, mayor, approved construction of municipal electric light plant at special election; to cost $135,000. (Noted Sept. 11.)

JEFFERSON, IOWA—Greene county rural electric co-operative, Clifford F. Unz, superintendent, has been granted $384,000 REA loan for construction of 385 miles rural transmission line in five counties.

LOWDEN, IOWA—City will hold special election Nov. 9 on proposal to construct municipal power and light plant not to exceed $70,000 in cost.

MARSHALLTOWN, IOWA — Marshall county rural electric co-operative, Harry H. Frey, superintendent, has been allotted $198,000 REA fund for 211 miles rural transmission line in Marshall, Story, Jasper, Lincoln, Tama counties. Stanley Engineering Co., Muscatine, Iowa, engineer.

ST. ANSGAR, IOWA — Co-operative Electric Co. of Osage, Louis J. Vandermyde, superintendent, has been allotted $143,000 REA fund for construction of 153 miles rural transmission line in Worth, Floyd, Chickasaw counties.

TAMA, IOWA—Office of Indian Affairs, Washington, is contemplating construction of power plant building to cost about $25,000 with equipment at Indian sanatorium here.

WATERLOO, IOWA—City, Knapp F. Matthews, clerk, is preparing plans for sections H, J, K, L and M in connection with construction of its sewage disposal plant. Included are special manhole and flood pumping stations which will cost about $36,000. C. T. Wilson, 322 Lafayette building, is city engineer.

Pacific Coast

LOS ANGELES—Bergstrom Steel Co., 3341 East Slauson avenue, has been issued building permit for construction of crane runway.

LOS ANGELES — Clarkiron Metals Corp. has been formed in Los Angeles county with capital stock of $500,000. A. C. Denman, Los Angeles; H. H. Powell, Westwood, Calif.; and J. J. Lawrence, Flinfridge, Calif., are directors. O'Melveny, Fuller & Myers, 433 South Spring street, are corporation's attorneys and representatives.

PORTLAND, OREG.—West Coast Lumbermen's association, Eugene Hayes, 823 Terminal Sales building, president, plans construction of modern lumber plant, with daily capacity of 80,000 to 100,000 feet, on Row river, Oregon, where site has been purchased. New machinery and equipment will be needed.

ANACORTES, WASH. — John-Jeffries Machines Inc., 201 Wells building, has been organized by James L. John and associates with $50,000 capital.

CHEHALIS, WASH. — Lewis county public utilities district number one has been allotted $250,000 REA fund for 189 miles rural transmission line.

COLVILLE, WASH. — Stevens County Electric Co-operative Inc. has been granted $326,000 REA loan for 292 miles rural transmission line.

GOLDENDALE, WASH.—Wash-Klickitat Pine Box Co., Phil Hingston, manager, announces immediate construction of new plant to replace one destroyed by fire in August. Plans call for modern design and new equipment.

NEWPORT, WASH.—Pend Oreille Electric Co-operative Inc. has $194,000 REA fund for 179 miles rural transmission line in Spokane county, Washington, and Bonner county, Idaho.

TACOMA, WASH. — Electric Super-Steam Heater Inc., 2006 South Prospect street, has been formed by R. H. Harris and associates with capitalization of $40,000.

Canada

TORONTO, ONT.—Ontario hydroelectric power commission, R. T. Jeffrey, 620 University avenue, engineer, plans $2,600,000 power development on Muskoka and Musguash rivers in Georgian bay district.

DESIRABLE EQUIPMENT

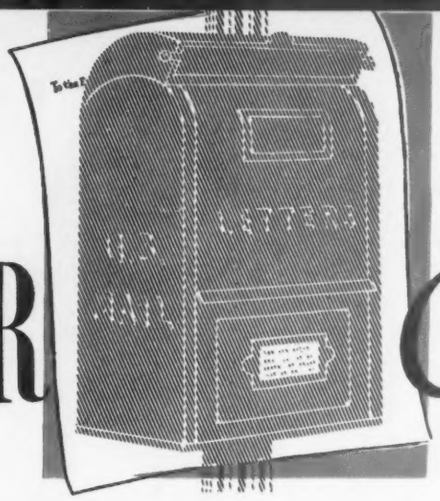
From Recent Dismantlements

1—Billet Lifting Magnet
5—Mill Type DC O.E.T. Cranes
3—Skinner Steam Heaters
1—Rotary bevel shear
7—AC Driven Centrifugal Pumps
2—Steam Turbo Centrifugal Pumps
1—Turbo DC Generator 125 V.
20—Gear Reducers
Lathes, Drills, Presses, etc.
Motors—AC and DC
Recording Instruments
Woodworking Machinery
1—American Watchman Clock
Switchboards, Starters, Panel Boards, & Boxes
1—10 Ton Hand Crane
1—Ingersoll Rand AC Motor Driven Compressor
1—Bury Compound Steam Horiz. Compressor
1—Westinghouse Turbo Generator 100 KVA-60 C.
1—5-ton O.E.T. Crane 33' span AC Motors
1—National Air Compressor DC Motor
7—International Time Recording Clocks
1—Chicago Pneumatic AC Motor Driven Compressor
1—Allis Chalmers 85 KVA Belted Generator 60 C.
16—Miller Hurst Conveyor Drives
6—Whitehead & Kales Conveyor Drives
1—Stiff Leg Steel Derrick 3 Drum DC Engine
1—Corliss Steam Engine 18 x 24
1—Allis Chalmers Steam Engine 22 x 36
1—70" Grand Rapids Blower 50 HP Motor AC
5—30" Grand Rapids Blower 5 HP Motor AC
3—Koons Oil Furnaces
1—Heine 400 HP Boiler
1—Keeler 430 HP Boiler
3—Kuhlman 200 KVA Transformers
1—Kuhlman 100 KVA Transformer
4—Freight Elevators

HETZ CONSTRUCTION CO., INC.

Phone 4474 **WARREN, OHIO** **Griswold St., N. E.**

READER Comments



Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

More About Depreciation Fund

To the Editor:

From Mr. Maurath's letter in STEEL (Oct. 16, p. 21), it would appear that he misunderstood Accountant's suggestion. Accountant does not say that reserves should be used to pay dividends; he does say that when they are used they should be marked, so advantage can be taken of the liquidating dividend to save on income tax payments.

Reserves and allowances and funds are very confusing to one not an accountant. I believe that the writer of the Accountant letter had a keen grasp of their meanings. Depreciation allowances are often termed funds erroneously. A reserve for depreciation and a reserve for contingencies are part of surplus account, segregated for the purpose of using when occasion demands.

They might not be kept "in a long green thing in the safe" but they are kept in black figures on the credit side of the ledger sheet. And in case there is a depreciation fund, then it could be kept in the long green thing, or the bank, or Aunt Emmy's sock.

If Mr. Maurath doubts that these reserves are often distributed as dividends his attention should be called to the testimony in many assignment and receivership cases in different states. Many small corporations make no provision for depreciation, but distribute the entire yearly earnings, and when necessity arises for replacement, use the profits of that period in payment.

Twenty years as a public accountant, prior to my present connection, have filled my case book with many examples of corporations paying dividends without deducting depreciation. When this occurs, Accountant suggests that a statement be made of this fact, so stockholder can treat same as a liquidating dividend in making his income report. Unless business is willing to do so, it might have a far greater worry on its corporate-intangible mind, that a war embroiling all of Europe would entail.

MACCULLOCH VAUGHAN

Auditor,
Schwab Safe Co.,
Lafayette, Ind.

Auto Evolution Not Finished

To the Editor:

Evolution of the present-day automobile from its whipsocket-and-dash days, reminiscent of the horse and buggy, is startlingly revealed in the abstract of the Automobile Manufacturers' association, presented in STEEL, Oct. 23, page 30.

Older drivers can remember from their own experience the various steps that led to the machine of today, with its refinements, increased safety factors and low price. Probably much the same story would be told in a similar chronology of most branches of industry. But the automobile evolution speaks more loudly since cars are driven by almost everyone.

However, with this remarkable record of improvement, we should not regard the present-day automobile as the completed product. In spite of the amazing record of improvement the future holds possibilities of as much more and perhaps in 40 years the present car will be regarded as a museum piece. No better tribute to American engineering genius could be presented than this birdseye view of automotive development, though probably this industry does not stand alone in this respect.

ENGINEER

Detroit

Real Cleanup in Scrap

To the Editor:

Present high price of steel scrap, nearly equal to that of pig iron, as reported in STEEL over the past few weeks, has had wide effects in localities not usually interested in this market.

During a recent motor trip, which included the width of Kentucky and part of Tennessee, I was struck by the activity of scrap dealers in the small towns, who seemed to be scouring the fence corners for every available piece of material. A glance at the contents of their trucks revealed the most heterogeneous collection of metal I ever have seen. It really looked as though they were cleaning up articles dating back all the way to the Civil war.

This condition contains the explanation of why the supply of scrap always seems to be sufficient to meet demand, if the price is high enough. Every dollar rise has enabled the "junk" dealers in a wider radius to ship to consuming centers at a profit.

If the present level continues a few months a tremendous tonnage of formerly almost valueless scrap will have been collected and shipped. It will be a real cleanup of many country districts, thus conferring a benefit on the locality, turning the scrap into money and aiding industry by increasing its available tonnage.

It is a tribute to the scrap industry's alertness that the response to higher prices is immediate and starts the flow from the widest possible area consistent with a reasonable profit for handling.

CONSUMER

Wheeling, W. Va.

TAKE THIS PUNCH FOR EXAMPLE—

WE STOCK IT IN 29 PUNCHING DIAMETERS

Write for Small Tool Hand Book

and as this is but one of our twenty-one standards you can imagine the enormous quantity of Punches carried in stock to meet immediate demands. Besides, for each standard Punch there is a standard Die, consequently our stock of Dies is as varied as our stock of Punches.

When you need Punches and Dies or other Small Tools such as Chisel Blanks, Coupling Nuts, Rivet Sets, Shear Blades, etc. specify Clevelands and your order will be shipped without delay.

Small Tools THE CLEVELAND PUNCH & SHEAR WORKS COMPANY *Cleveland, Ohio*

NEW YORK • CHICAGO • DETROIT • PHILADELPHIA • PITTSBURGH